UNIT 437

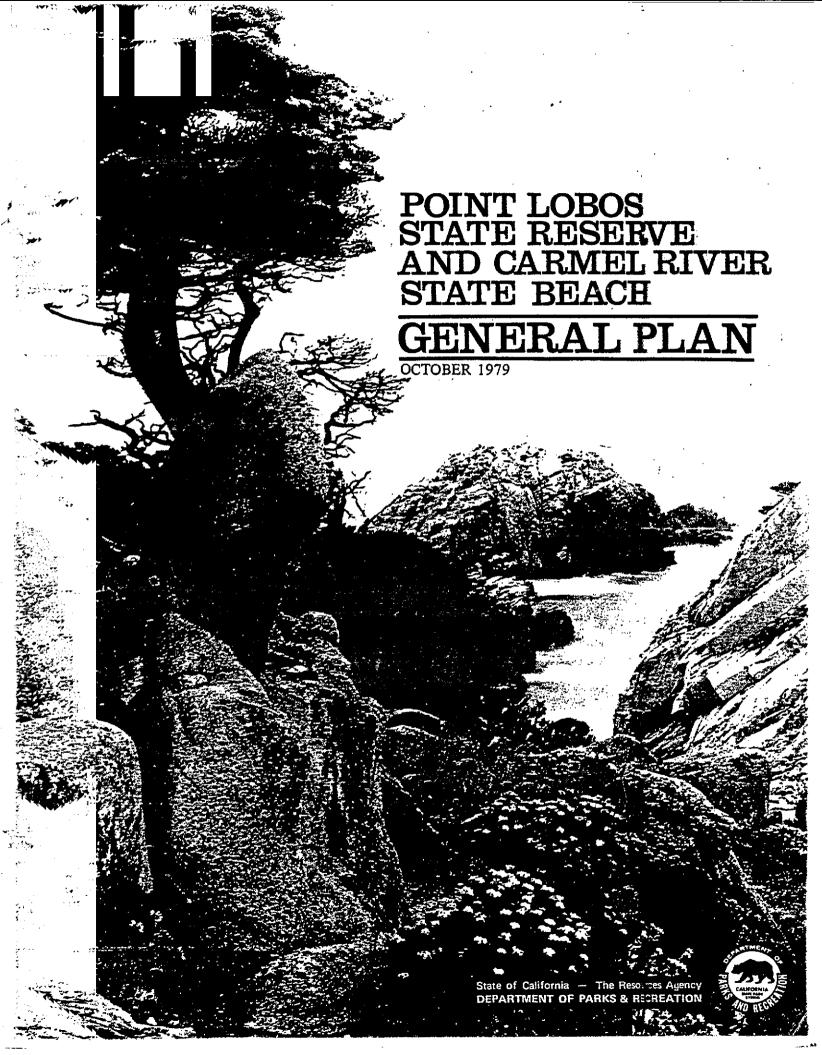


CARMEL RIVER STATE BEACH

GENERAL PLAN (*)

May 1979

(*) Note: This unit's General Plan is contained within the general plan document for two units, Carmel River SB and Point Lobos SR



Point Lobos State Reserve and Carmel River State Beach

GENERAL PLAN

October 1979

Edmund G. Brown, Jr. Governor of California

Huey D. Johnson Secretary for Resources

Russell W. Cahill Director



State of California - The Resources Agency
Department of Parks and Recreation
P. O. Box 2390
Sacramento, CA 95811

Resolution 27 - 79 Resolution adopted by the CALIFORNIA PARK AND RECREATION COMMISSION at its regular meeting in Pacific Grove May 11, 1979

WHEREAS, the Director of the Department of Parks and Recreation has presented to this Commission for approval the proposed General Plan for Point Lobos State Reserve and Carmel River State Beach; and

WHEREAS, this reflecte the long-range development plan as to provide for the optimum use and enjoyment of the unit as well as the protection of its quality;

NOW THEREFORE, BE IT RESOLVED that the State Park and Recreation Commission approves the Department of Parks and Recreation's General Plan for Point Lobos State Reserve and Carmel River State Beach, preliminary dated March 1979, subject to the following changes:

1. The deletion of pages 99 and 100 relating to the Resource Protection Zone from the plan and the following dictated change referring to potential acquisition. (This change is paraphrased in the text on page 98.)

"The general areas recommended as potential additions will need to be studied in greater detail in order to establish specific boundary lines before any area could be proposed for acquisition.

"Consideration of the following areas as potential acquisition recognizes that any such planning statements are subject to prior decisions by the owners of affected properties to develop the subject lands in ways which will render them unsuitable for the stated park purposes".

- 2. The Hudson House shall have temporary public use. The management of the Hudson House may include such uses as Docent Stations, Advisory Committee Study Center, Ranger Residence, Educational Staging Unit, and other limited public uses. The Director shall obtain approval of the Commission before terminating all public use.
- 3. The Department to investigate the feasibility for more flexible carrying capacity to accommodate distant visitor use.
- The flexible management of a tram system as to time, purpose, i.e., stops or straight route, consideration to closed and open cars.
- 5. Management to allow for cyclical closure of the park or sections of the park for management purposes and restoration as further study necessitates.
- 6. Removal of shoulder parking on Highway 1 (at San Jose Creek beach) to be considered as an emergency measure. (Page 88. Alternative location, Eucalyptus Grove, 75 car preferred and the polo field as the alternative location. All parking should have minimal impact upon the area and should have screening and berming against visual and noise pollution.
- 7. The Commission supports use of natural features and such as fire as part of the natural progression of biotic life;

and subject to such environmental changes as the Director of Parks and Recreation shall determine advisable and necessary to implement carrying out the provisions and objectives of said plan.

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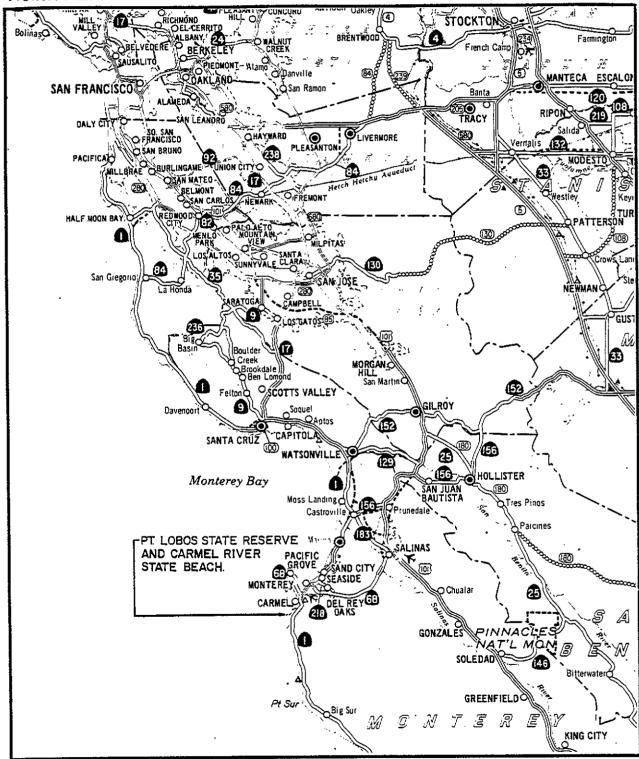
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SUMMARY

This General Plan addresses certain critical needs for changes in resource management, development, and operations at Point Lobos State Reserve and Carmel River State Beach. These contiguous units of the State Park System serve essentially different purposes, but because of their geographical positions it is advisable to consider them together in the planning process.

Our overriding concern is to preserve the fragile resources of Point Lobos State Reserve and Carmel River State Beach and to improve the quality of the visitor's experience at these units. To achieve this we have made a very thorough analysis and evaluation of all the resources and of the environmental impact of any changes. On the basis of this evaluation, we recommend the following:

For Point Lobos State Reserve

- * Initiation of an ecological monitoring program for ongoing resource protection
- * Stabilization of various archeological sites
- * Restoration of the natural processes of the reserve's ecosystem
- * Strict maintenance of a 450-person instantaneous carrying capacity
- * Development of a visitor orientation area (main parking lot, orientation facility, and shuttle bus staging area)
- * Reduction and, if necessary, eventual elimination of automobile traffic; provision of a shuttle bus for visitor circulation
- * Restoration of the natural scene wherever possible by removing certain facilities
- * Expansion of interpretive program to enhance visitors' understanding and appreciation
- * Provision of limited public access to two areas currently without public access—the Gowen Cypress Area and the recently acquired area south of San Jose Creek Beach

For Carmel River State Beach

- * Classification of the Carmel River Lagoon area as a Natural Preserve
- * Stabilization of various archeological sites
- * Development of a 75-car parking lot with restrooms, a few picnic tables, and an improved interpretive program
- * Retention of the agricultural use of the Odello property as an important historic activity

For Underwater Areas

- * Expansion of the boundaries of the Point Lobos Ecological Reserve beyond the 20-fathom line and the placement of both underwater ecological reserves under the jurisdiction of the Department of Parks and Recreation
- * Improved interpretation of these areas

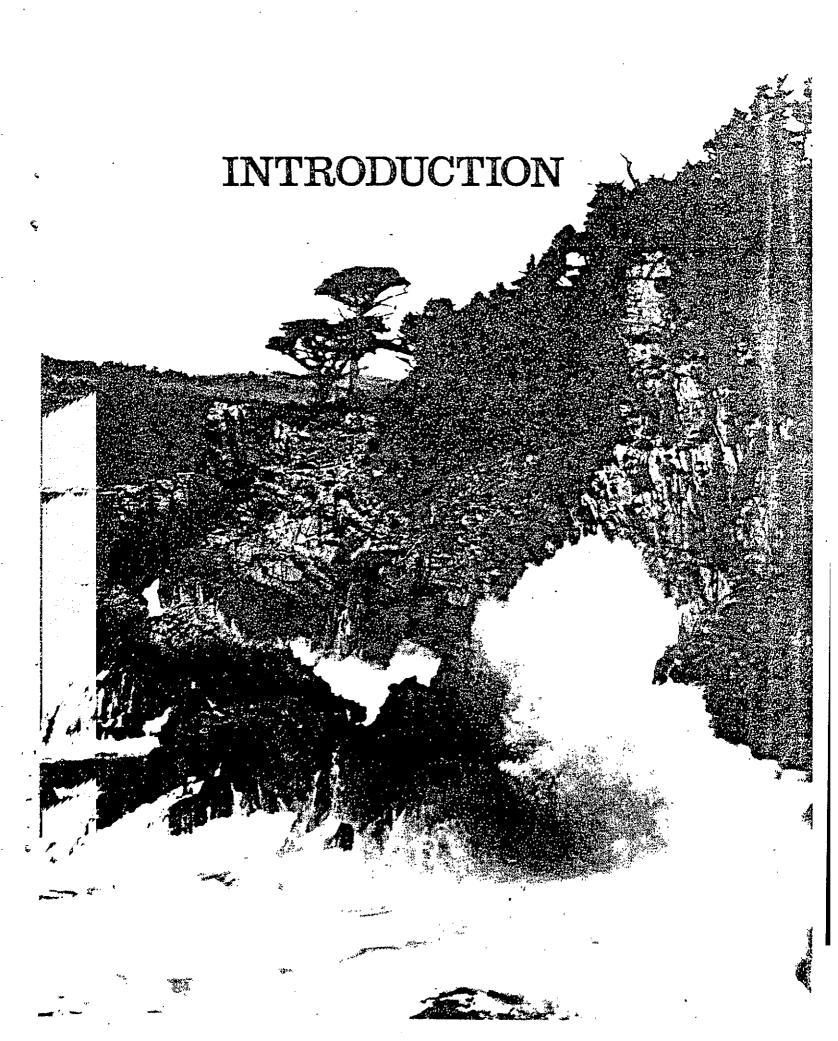
For the Resource Protection Zone of the Region

* Consideration by the department of certain recommended potential additions

In preparing this report, the planning team looked beyond the existing unit boundaries in order to integrate the proposals with other planning efforts. Although certain private lands are identified as potential additions, this plan is a workable one that does not depend upon future acquisition. It was prepared in cooperation with the California Coastal Commission and conforms to its policies as well as to other state policies.

It should be emphasized that no irreversible developments are proposed in this plan. If, in the future, it is deemed advisable to make changes, rehabilitation of any area can be accomplished. For example, should the park boundaries be expanded and the highway realigned to its former location, the proposed parking facility might be relocated and the area restored to its natural state.

We are recommending a thorough, ongoing study of the reserve. The monitoring program is essential both for our primary goal of protecting the resources here and for expanding the scientific basis for developing specific programs to restore the ecosystems to their condition before the coming of European man.



INTRODUCTION

"Point Lobos is the greatest meeting of land and water in the world."

--Francis McComas

INTRODUCTION

PROJECT DESCRIPTION

This General Plan deals with two contiguous units of the State Park System--Point Lobos State Reserve and Carmel River State Beach. These units serve very different purposes, and each poses its individual problems, but because of their physical proximity it is advisable to consider them as a whole when planning needed changes in the units.

Point Lobos State Reserve

It has been more than forty years since the California State Park System first put the "reserve" concept into effect—at Point Lobos State Reserve near Monterey. Unlike many state parks whose purpose is to provide a wide variety of recreational experiences or to preserve historic sites, Point Lobos was acquired primarily to preserve its rare scenic beauty and unusual natural landscape.

Located about seven miles south of Monterey, the rocky promontory called Point Lobos has offered many things to the millions of people who have visited it over the years. In addition to the spectacular beauty of the Point, nearly every aspect of its resources is of scientific interest. There are rare plant communities, endangered archeological sites, unique geological formations, and incredibly rich flora and fauna of both land and sea.

The greatest distinction of all, however, the one characteristic that sets Point Lobos apart from other scenic coastal areas, is the presence of the most outstanding natural grove of <u>Cupressus macrocarpa</u>, the Monterey cypress. Once widely distributed, this picturesque tree is found in its natural state only here at Point Lobos in significant numbers.

Deriving its name from the offshore rocks at Punta de los Lobos Marinos, Point of the Seawolves, where the sound of the sea lions carries inland, the reserve has often been called "the crown jewel of the State Park System."

History of Point Lobos as a Reserve

Throughout the twentieth century, the number of tourists visiting the Point Lobos area grew; by 1914, some twenty-five thousand persons were visiting each year. In 1926 the Save-the-Redwoods League met to promote the idea of acquiring Point Lobos as a public reserve. The meeting resulted in hiring Frederick Law Olmsted, well-known landscape architect, to make a study and prepare a report on the areas in the state most worthy of preservation. The report, released to the public in 1929, found Point Lobos "to be of primary importance." This started the movement toward the state's acquisition of Point Lobos. On February 8, 1933, the transfer of land was finally accomplished, and Point Lobos became public property.

At the end of this same year, the Advisory Committee on Protection and Use of Point Lobos and Frederick Law Olmsted were asked to make the master plan for development and administration of Point Lobos. The study and master plan were financed by the Carnegie Foundation and the Save-the-Redwoods League. The final report with policy recommendations, was submitted to the State Park Commission in 1936. It was such a complete and comprehensive document that it was approved and immediately put into action. (See Appendix B for summary of Olmsted report.)

Description of Areas

The original acquisition covers about 144 hectares (356 acres) and provides the most significant physical features, which are viewed from nearly 4 kilometers (2-1/2 miles) of roads and over 10 kilometers (6 miles) of trails. From Highway 1, the land gradually slopes toward the ocean with small hills rising from the basically level plain. The land is dominated by old marine terraces and gentle escarpments. In dramatic contrast stand the rocky promontories of Big Dome, Pelican Point, and Point Lobos itself. Big Dome is the most rugged of these hills, rising to over 75 meters (250 feet) in elevation (see Maps 1 and 2).

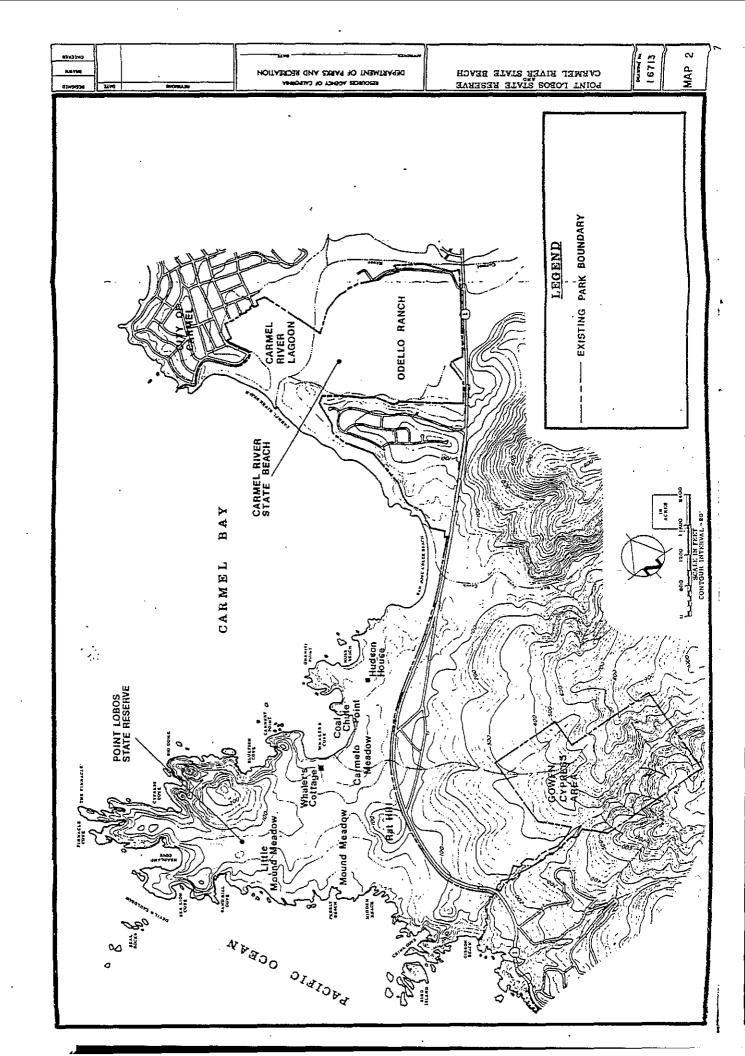
Along the north shore lies the majestic Monterey Cypress Grove, where the famous wind-shaped Veteran Cypress clings precariously on the steep coastal cliffs that drop as much as 60 meters (200 feet) down to the ocean. Caves are found scattered in the headlands where land meets sea, with islands and pinnacles rising above the water a short distance offshore. The ocean views from the north shore are no less than spectacular. In the nearby deeper soils grow the Monterey pines, protected from the sea winds and salt spray. The serene quality of Whaler's Cove is enhanced in springtime by a display of wildflowers in Carmelo Meadow.

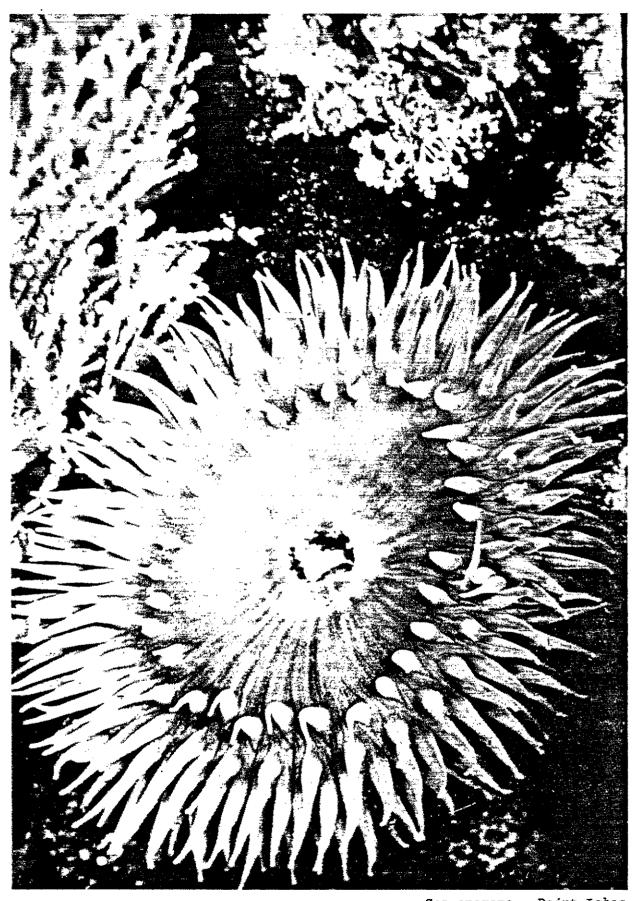
One of the most dramatic sights at Point Lobos is the never-ending crashing of the sea upon the south shore rocks. These low-lying rocks are interrupted by a series of small coves, rich with intertidal marine life, and sheltered sandy beaches. Sea lions (both the California and Stellar species) and atters are commonly seen here and receive more attention from the visitors than any other mammals. Although Bird Island no longer serves as a nesting site for the rare brown pelican, it attracts a wide variety of animal and bird life. In the spring its landward slope is black with nesting cormorants.

Gibson Creek, on the southern boundary of the reserve, drains a small but steep watershed. In 1962 a portion of this watershed, covering about 61 hectares (150 acres) east of Highway 1, was given to by the state by Herman Marks. It contains two rare stands of Gowen cypress trees. Connected to the main part of Point Lobos State Reserve by a narrow finger of land, this area is the highest section of the reserve, some points having an elevation of 274 meters (960 feet). Although several unpaved roads and trails exist in the vicinity, the Gibson Creek Canyon is too steep to allow visitor access on existing state property.

Immediately to the north of the reserve is a parcel of land acquired in 1976, 19.4 hectares (48 acres) in size. This property has been somewhat altered over the years by the planting of nonnative grasses and cattle grazing. Travelers along Highway I see a panoramic view of the ocean, Point Lobos, and Carmel across this property. A modern home, known as the Hudson House, is located here. It was built in 1948 and is currently used as a staff residence.

A large underwater area next to Point Lobos, covering 304 hectares (750 acres), is owned by the department and is a part of Point Lobos State Reserve. This area is classified as an ecological reserve and an area of special biological significance. As such, no fishing and no collecting of plants or marine animals is permitted within its underwater boundaries. Diving access is limited to the Whaler's Cove parking lot, with diving permitted in Whaler's and Bluefish coves.





Sea anemone - Point Lobos (Photo by Tom Myers)

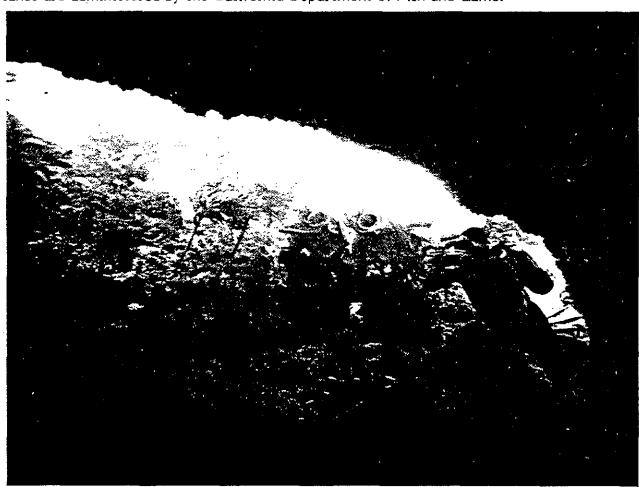
In keeping with the natural setting, there are few facilities in the reserve. Roads and trails lead to most of the major areas of interest, several parking areas with restrooms are nearby, and limited picnic facilities are provided. Staff residences, a maintenance shop, and the park office are clustered in an area just south of the entrance station.

Carmel River State Beach

Carmel River State Beach, acquired in 1953, is located directly north of Point Lobos and consists of 42 hectares (105 acres) and 4 kilometers (1-1/2 miles) of shoreline. There are two main beaches, at the mouths of Carmel River and San Jose Creek, which offer a variety of recreational opportunities. Since there are no parking facilities at San Jose Creek Beach, visitors park their cars along the west shoulder of Highway I. This beach, often called Monastery Beach, is heavily used by SCUBA divers and sunbathers.

The lagoon at the Carmel River mouth provides a nesting place and habitat for many species of wildfowl. A 40-car parking lot and restrooms are the only facilities at this location. Recently, the state added 69.2 hectares (155 acres) of agricultural land to Carmel River State Beach. This agricultural land is known as the Odello property.

The submarine lands adjacent to Carmel River State Beach are in the Carmel Bay Ecological Reserve and the Carmel Bay Area of Special Biological Significance. These lands are administered by the California Department of Fish and Game.



Underwater Ecological Reserve (Photo from Pt. Lobos, Interpretation of a Primitive Landscape.)

PURPOSE OF PLAN

The essence of the reserve policy has been to interfere as little as possible with the natural processes of the environment. This was understood when the original master plan for Point Lobos was prepared by a group of scientists, artists, and conservationists. They grappled with the problem of how to make these unique natural qualities available for the public to enjoy and, at the same time, preserve them for future generations.

The approach then was one of moderation. Existing conditions were changed as little as possible—almost half of the roads that had been built by previous landowners were removed, but parking lots were provided near the major points of interest. Camping was not allowed, and picnic facilities were kept to a minimum.

Dramatic changes have occurred since then, however, and it is now necessary to reevaluate the management and visitor use of Point Lobos. Some of these changes are summarized here.

- * Ten years ago, about 170,000 people visited Point Lobos annually. Last year, there were over 270,000 visitors, and many more were turned away. On a typical weekend, the peaceful atmosphere of one of the most beautiful spots in the world is disappearing. If this trend is allowed to continue, some of the reserve's precious qualities may be lost forever.
- * The Point Lobos landscape has undergone considerable change. Due to the steady spreading of Monterey pines, the open meadows are gradually diminishing. The diversity of plant species is declining and the buildup of brush is increasing the fire hazard.
- * Because parking areas are scattered and there is no visitor orientation facility, it is currently difficult to educate visitors about the values of Point Lobos.
- * The problem of overcrowding is compounded by the high numbers of "casual visitors"—those who quickly drive through the reserve without ever leaving their cars. With an improved method of visitor control and orientation, the number of "casual visitors" could be greatly reduced.
- * In 1962, a piece of property east of Highway I, covering about 61 hectares (150 acres), was added to the reserve. It contains a stand of the rare Gowen cypress, the only other being at Huckleberry Hill on the Monterey Peninsula. The dilemma here is how to provide public access to the area without endangering this unique vegetation.
- * The recently acquired property just north of Point Lobos, 19.4 hectares (48 acres) in size, links the reserve with Carmel River State Beach. In order to properly evaluate how this land should be managed and used, it is necessary to establish long-range quidelines for Carmel River State Beach, as well as Point Lobos.
- * Since its acquisition in 1953, Carmel River State Beach has had a parking problem that grows steadily worse each year. There is currently no parking lot along San Jose Creek Beach, and visitors use the shoulder of Highway I. This has created an extreme safety hazard for motorists and pedestrians, as well as an obstruction to the scenic view of Carmel Bay.

* Ever since the Odello property, now used chiefly for growing artichokes, was added to Carmel River State Beach a few years ago, there has been speculation on what recreational facilities would be developed there. The long-term use of this property should be decided upon.

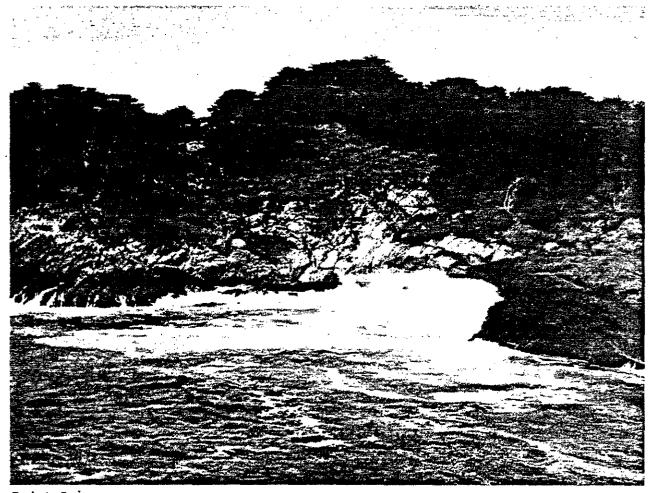
As indicated by the public comments on this project, these dramatic changes have resulted in a new public attitude toward Point Lobos. Forty years ago we designed the reserve for an urban population that was just beginning to explore weekend "motor vacationing." As expanding urbanization has led to the development of middle class suburbia, more people have been seeking the refreshing qualities of the reserve—its scenery, its wildlife, and, perhaps most of all, its quietness. We are becoming more aware that the precious natural qualities of Point Lobos are in danger. We are concerned about the excessive crowding, the trampling of vegetation along the south shore, the traffic congestion, and long lines of cars waiting to enter the reserve. Instead of perceiving Point Lobos as a natural wonder to be viewed from a car window, we have a new attitude that expresses a desire to experience in a more intimate manner this spectacular beauty in its natural state, undisturbed by man.

The changes discussed above threaten the essential beauty and character of the reserve. The purpose of this General Plan is to define those measures that should now be taken to solve the problems posed by these changes.

The specific objectives of this plan are to:

- * Identify the cultural and natural resources of Point Lobos SR and Carmel River SB;
- * Establish policies for the management, protection, and interpretation of these resources;
- * Determine visitor activities and land uses that are compatible with the purposes of the units, the available resources, and the surrounding area;
- * Determine the potential environmental impact of these visitor activities and land uses;
- * Establish guidelines for the sequence of developments;
- * Identify lands outside the existing boundary that would be valuable additions to the unit;
- * Make recommendations for additional studies beyond the scope of this document;
- * Inform the California Coastal Commission of the future plans for Point Lobos SR and Carmel River SB;
- * Provide an informational document for the public, the legislature, department personnel, and other government agencies.

While this plan is a comprehensive planning document, it must also be a flexible planning tool. All proposals are intended to be used as guidelines and can be modified if deemed advisable because of new information. A time period of twenty years is used as a basis for all projections of visitation and development. Projections beyond this time cannot be accurately determined.



Point Lobos

There is a clear difference between the intended management and use of Point Lobos State Reserve and Carmel River State Beach. As a state reserve, Point Lobos exists to "preserve its native ecological associations, unique faunal or floral characteristics, geological features and scenic qualities in a condition of undisturbed integrity." This plan proposes to increase public awareness of this purpose by educating visitors on the scenic and natural qualities that have caused this area to be described as the greatest meeting of land and water in the world.

In contrast, Carmel River State Beach, which consists primarily of oceanfront property, is "designed to provide swimming, boating, fishing, and other beach-oriented recreational facilities."²

¹California Public Resources Code, Section 5019.65. ²California Public Resources Code, Section 5019.56(d).

The extremely intricate and differentially eroded coastline of Point Lobos attracts hundreds of thousands of visitors each year. In the past trails have existed in very dangerous areas along the rugged shoreline—along the extreme edge of the North Shore along the base and up onto Big Dome; down onto small beaches that were covered with water at high tide; and along the base of cliffs from which rock material occasionally sloughed off onto the trail. Today most of these earlier mistakes in trail alignment have been corrected.

(3) Soil Erodibility/Compaction. Soil erodibility is dependent on a number of factors including slope, parent material, vegetation cover, permeability, water-holding capacity, etc. Inherent erosion hazard of soils is delineated in Map 6.

Soil disturbances due to human impact at Point Lobos State Reserve and Carmel River State Beach are shown on Map 7. These disturbances are divided into highly compacted areas, highly eroded areas, and areas where topsoil has been removed by heavy equipment, etc.



The increase in visitors has caused soil compaction along the coastline

In order to identify and analyze the concerns of local and statewide citizens, a six-step public involvement program was followed as an integral part of the planning process. These steps were:

1. Project Initiation

Preliminary meetings were held to establish the general goals of the project with department staff, other government agencies, private organizations, the Advisory Committee, and the Natural History Association.

2. Data Collection

This step began with the distribution of a questionnaire in January 1978. It was available at the Point Lobos entrance station, the Coastal Commission office in Santa Cruz, the Resources Agency Building in Sacramento, and the first public workshop on January 31, 1978, in Monterey. Response to the questionnaire was about 18 percent. The first public workshop was successful, with an attendance of about 70 people, mostly from the Monterey area. It became readily apparent that the participants were highly sensitive to the reserve's natural values and recognized the problems of overuse.

3. Analysis

Following the meeting, and after receipt of the completed questionnaires, the planners compiled the public comments and published them in a newsletter (see Appendix A). The newsletter was mailed to the many people and organizations on the mailing list and included an announcement of the second public meeting.

4. Development of Alternatives

From the public comments and resource evaluation, three alternatives were designed to reflect distinctly different development philosophies: one that provided for motor vehicles and a shuttle system year-round; one that allowed vehicles in the off-season and a shuttle system during the peak season; and one based on walk-in visitors only—no vehicles or shuttle system.

5. Public Review of Alternatives

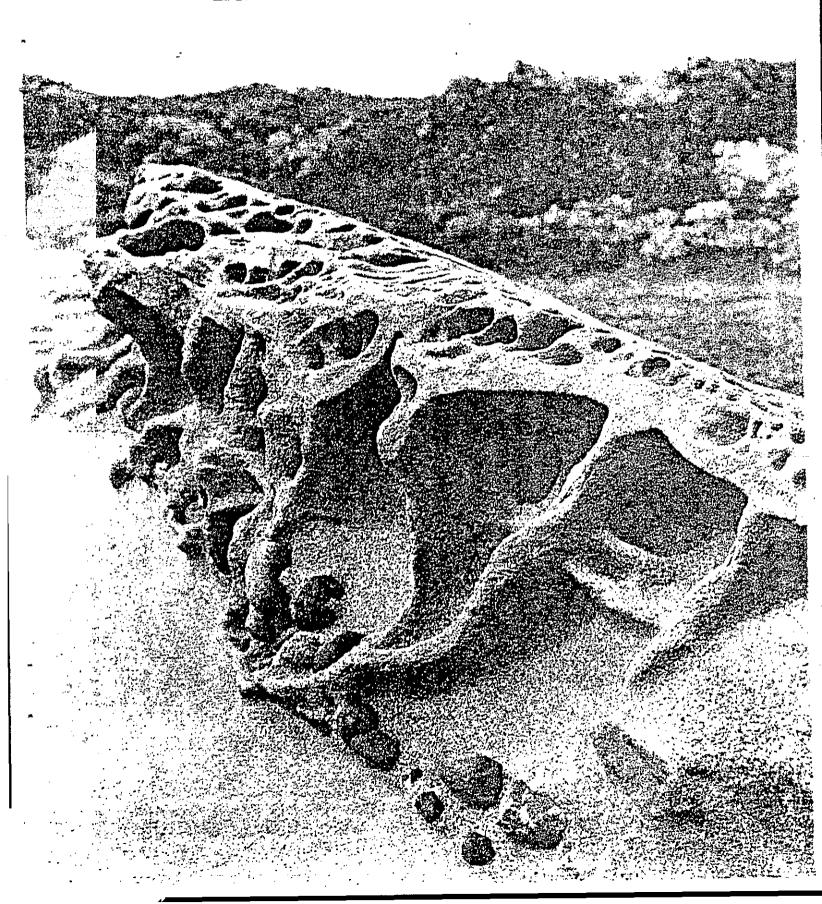
On June 21, 1978 the second public workshop was held in Monterey to discuss the alternative plans. Although most citizens agreed that high visitor attendance is seriously damaging parts of Point Lobos, there was a difference of opinion on how to solve the problem. Some felt that motor vehicles should be totally eliminated, some were in favor of removing the South Shore Road, and others believed the existing key parking lot locations should be retained. Most agreed, however, that one main visitor parking area and a shuttle system would best solve the visitor control problem.

6. Preliminary Plan

Based on the resource evaluation, management policies, and public comments received at the workshops and in the questionnaire, this Preliminary General Plan document was prepared. It is scheduled to be reviewed for approval by the State Park and Recreation Commission at a public hearing in May 1979.

Prior to this hearing, the plan will be reviewed by other government agencies, citizen groups, the Advisory Committee, and a third public meeting in Monterey.

RESOURCE ELEMENT



RESOURCE ÉLÉMENT

"The timeless battering and grinding of the sea upon the shore is one of the most powerful, persistent, and dramatic of the natural processes characteristic of Point Lobos."

--Frederick Law Olmsted, Jr.

RESOURCE ELEMENT

The purpose of this Resource Element is to establish the specific long-range management objectives and policies necessary to preserve the resource values for which Point Lobos State Reserve and Carmel River State Beach were established. The element identifies specific resource sensitivities and physical constraints, and establishes the department's guidelines for acceptable levels of development and use.

RESOURCE EVALUATION

This resource evaluation is based on data provided in the "Inventory of Features for Point Lobos State Reserve and Carmel River State Beach (MS on file with the Resource Preservation and Interpretation Division, Department of Parks and Recreation, Sacramento). Resource descriptions and analyses are based on a methodology used to determine the significance and sensitivity of various resources throughout the State Park System. Maps, prepared by this methodology, identify areas of varying sensitivities, significance, hazard, and the like.² It is on this thorough analysis of specific areas that we base our management policies and recommendations.

²For a more detailed explanation of methods, see Ecological Limitations on Land Use, page 50 and Appendix E.



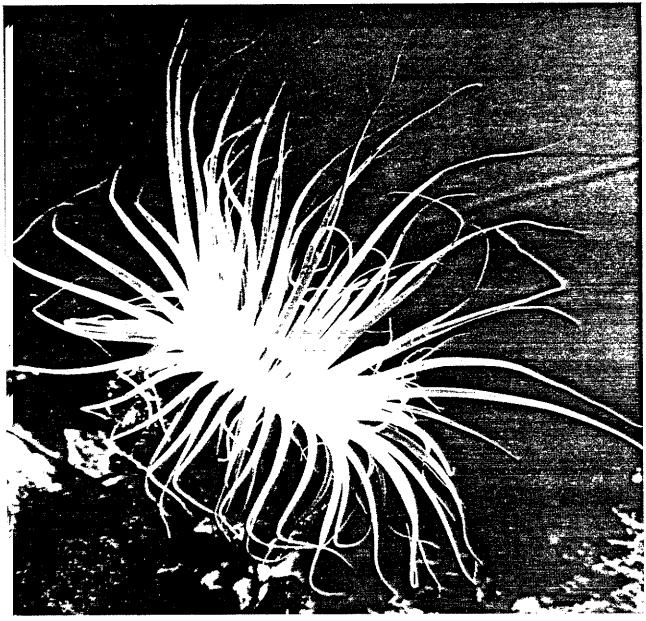
Aerial photo of Point Lobos (State Department of Transportation photo)

In compliance with SB 1982 and the California Public Resource Code. For pertinent sections, see Appendix D.

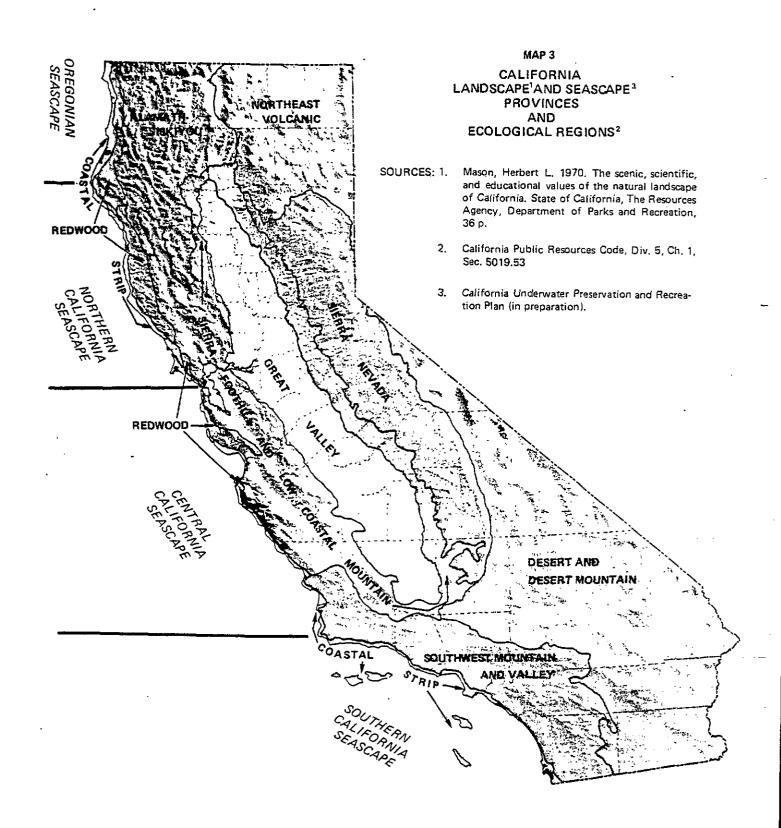
Point Lobos State Reserve is in the Coastal Strip and Redwood Landscape provinces and ecological regions. Carmel River State Beach is in the Coastal Strip Landscape Province and Ecological Region. The submarine portion of Point Lobos State Reserve is in the Central California Seascape Province. (See Map 3.)

Esthetic Values

The beauty of the Point Lobos coastal landscape is renowned; it is certainly one of California's finest scenic resources. Less well known are the beautiful underwater scenes, which are rivaled only by the Julia P. Burns Underwater State Park and some areas around the Channel Islands.



The tube anemone undulates gracefully with the water movement. (Photo by Bob Hollis.)





Carmel River State Beach

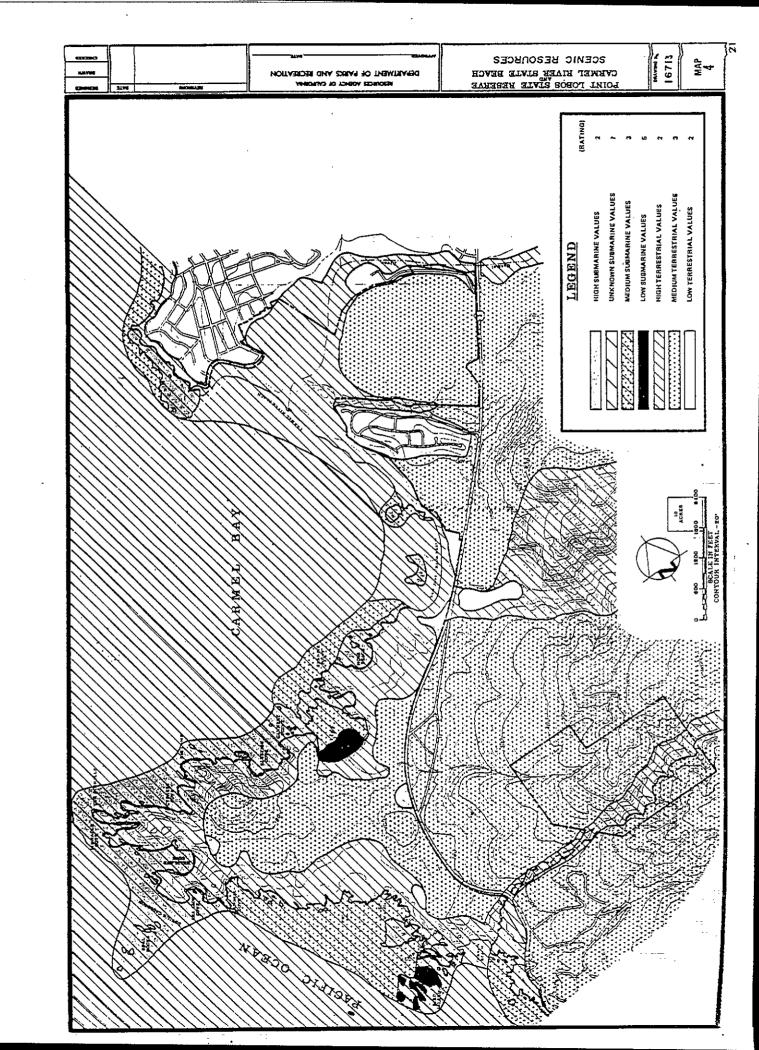
Carmel River State Beach, with its view of Point Lobos and its long ribbon of white sand, is one of the most scenic beaches in California. However, Highway I and roadside parking near San Jose Creek Beach do intrude and mar these scenic resources. (See Map 4.)

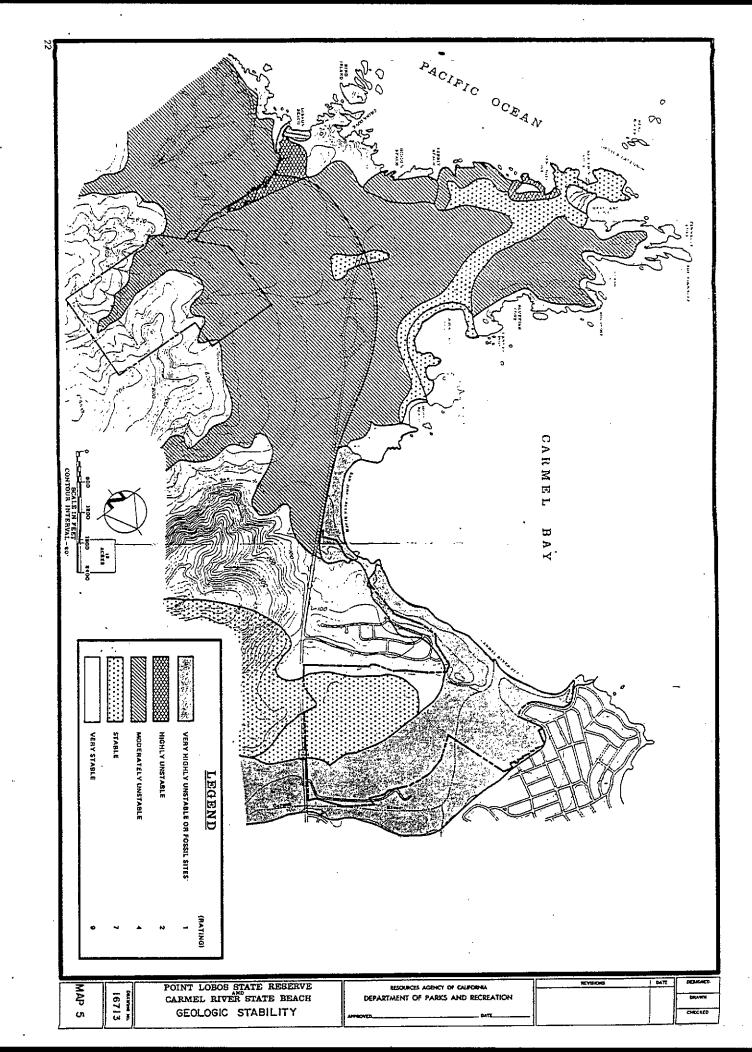
The submarine scenic resources of the Carmel Bay Ecological Reserve are particularly noteworthy, especially the submarine canyon and the pinnacles off Pescadero Point, and the point at which the submarine canyon meets the shore at San Jose Creek Beach.

Natural Values Abiotic Environment

Atmospheric Factors

- (1) Climatology. The climate of the Point Lobos area is Maritime Mediterranean with warm, rainy winters and cool, foggy summers. Small daily and seasonal temperature variances are characteristic. Mean high temperatures at Point Lobos are consistently between 18° and 24° C (64° and 75° F); lows seldom fall below 17° C (62° F). Winds are typically light in intensity and prevailing winds are sea breezes. Fog occurs for about 135 days per year, mainly between July and September. Microclimates vary considerably over the project area. Point Lobos has one of the most equable climate of any location in the state.
- (2) Air Quality. No data are available for Point Lobos; however, air quality apparently is good, as sea breezes are dominant in the area. The proposed Point Lobos Ranch development to the east of Point Lobos could cause serious air quality problems. Monterey cypress is quite susceptible to pollution damage. Since the high density development proposed for Point Lobos Ranch area would bring increased auto traffic, pollution from auto exhausts could damage vegetation of the reserve when airflow is seaward.





Geomorphic Factors

- (1) <u>Topography</u>. Relief is generally quite gentle with the exception of sea bluffs and the steep-sided Gibson Canyon. Marine topography is quite variable with great changes in relief occurring in the Carmel Submarine Canyon.
- (2) Geology. Following procedures discussed by Blanc and Cleveland (1968) and modified to fit an overall rating system, the relative geologic stabilities of rock formations found at Point Lobos are given in table 1. The relative stability ratings in table 1 are based on field observations and data presented in the resource inventory. Map 5 delineates the areas of various geologic stabilities.

Table 1
Stability Ratings of Point Lobos Rock Types

Rock Type	Stability Rating (In order of decreasing stability)
Porophyritic granodiorite of Monterey	9
Miocene extrusives	7
Temblor formation	· 7
Carmelo formation	4 .
Monterey formation	4
Aromas formation	2 .
Terrace sediments	2
Recent sediments	1

The Carmelo formation contains plant and animal fossils which, for the most part, are poorly preserved. The Temblor formation is known to contain fossil beds, but none have been found in the project zone of interest. Occasionally, fossiliferous beds in Monterey sandstone yield numerous fossils.

Pleistocene marine terrace deposits represent a key to past geobioevolutionary processes. Of great importance are the mina-mounds found in the Mound and Little Mound meadows. The origin of these mina-mounds is unknown. They are the only such mounds found on the California coast and represent a phenomenon that needs intensive investigation.

Locations of significant surface outcrops are given in the resource inventory.

In the northern submarine portion of the reserve lies the Carmel Submarine Canyon. This canyon is a branch of the larger Monterey Submarine Canyon, a major geomorphic feature of the California coast.

Seismic hazards include many potentially active faults immediately offshore and the young fault mapped as underlying or displacing recent deposits in Carmel River.

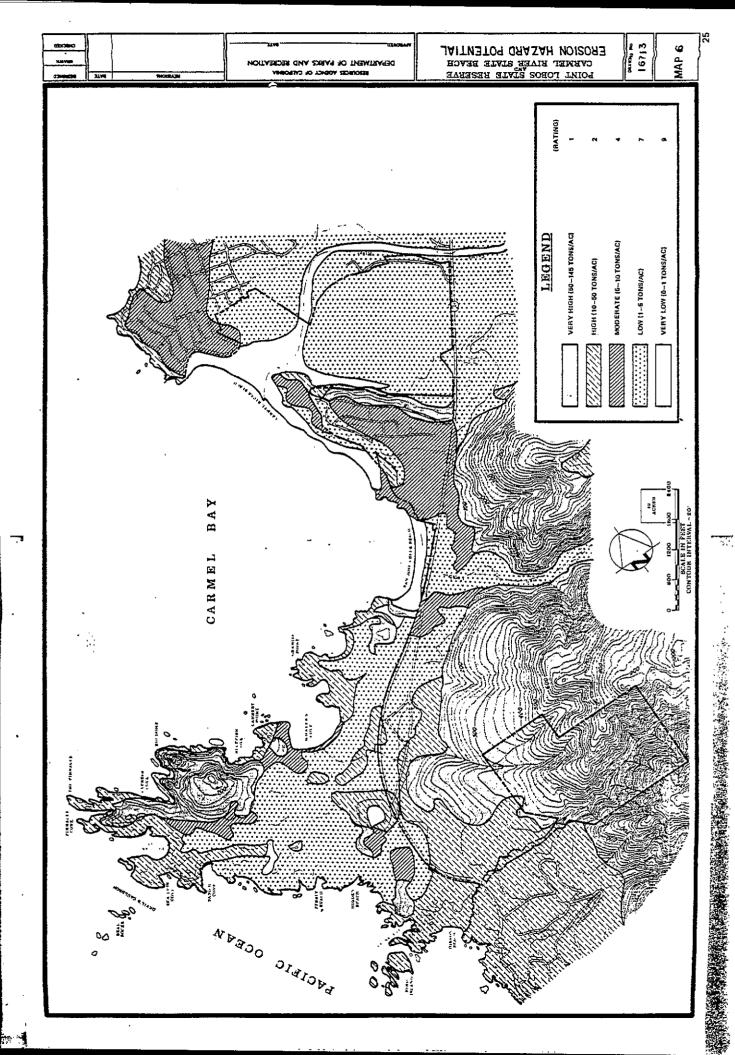
The extremely intricate and differentially eroded coastline of Point Lobos attracts hundreds of thousands of visitors each year. In the past trails have existed in very dangerous areas along the rugged shoreline—along the extreme edge of the North Shore along the base and up onto Big Dome; down onto small beaches that were covered with water at high tide; and along the base of cliffs from which rock material occasionally sloughed off onto the trail. Today most of these earlier mistakes in trail alignment have been corrected.

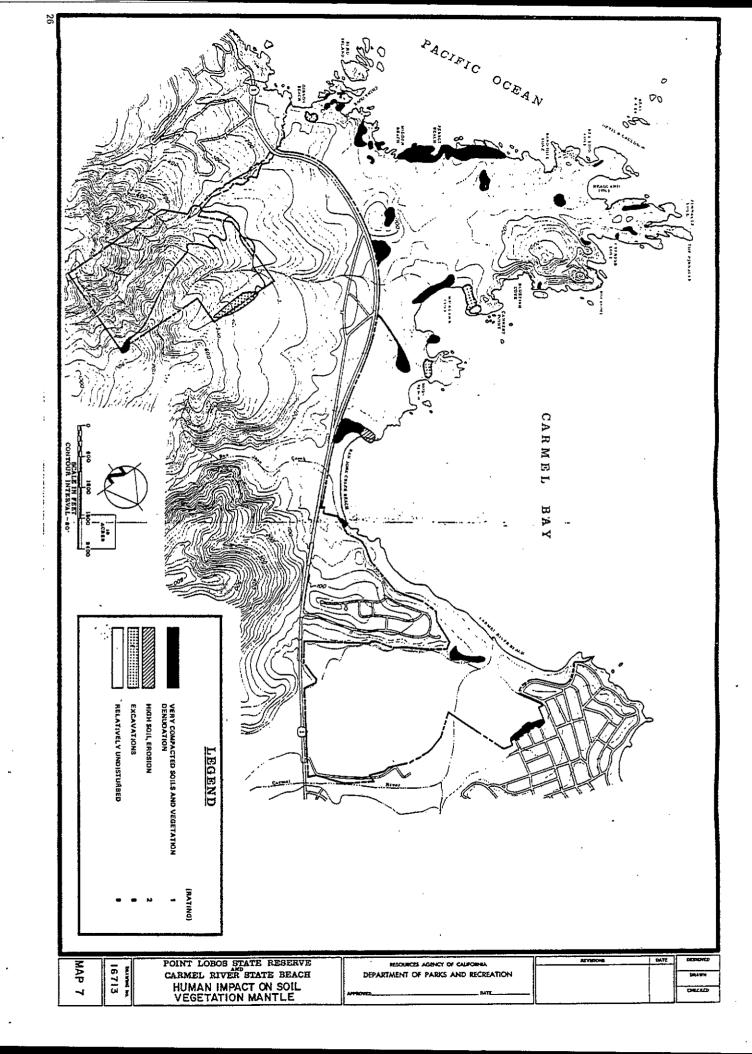
(3) Soil Erodibility/Compaction. Soil erodibility is dependent on a number of factors including slope, parent material, vegetation cover, permeability, water-holding capacity, etc. Inherent erosion hazard of soils is delineated in Map 6.

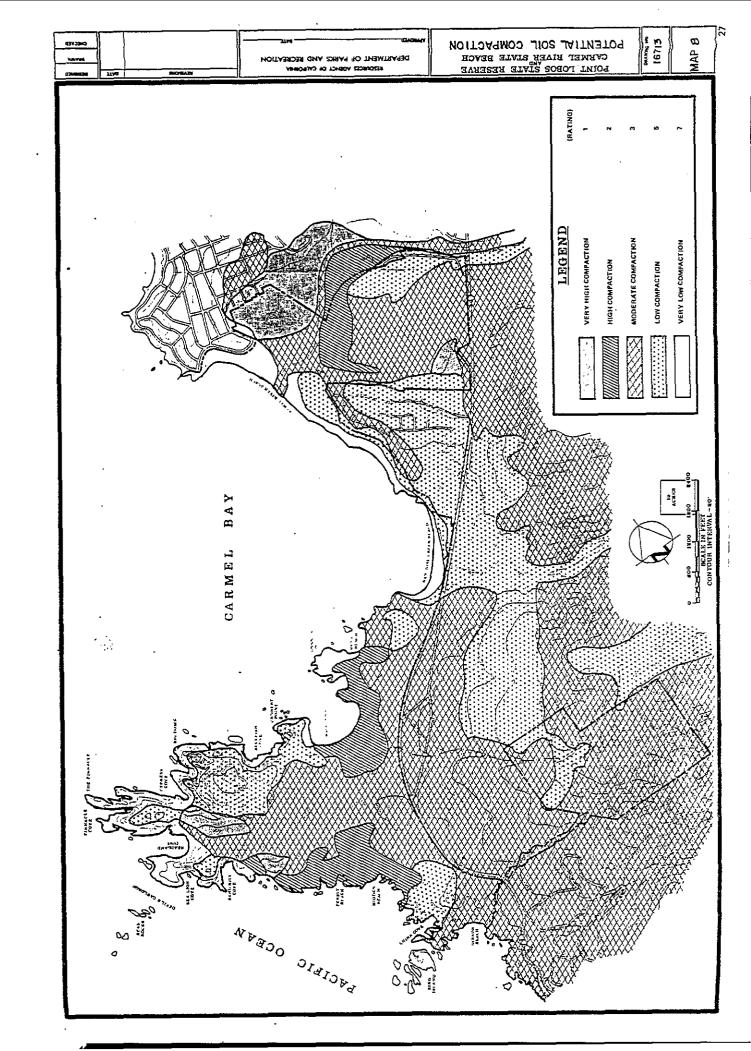
Soil disturbances due to human impact at Point Lobos State Reserve and Carmel River State Beach are shown on Map 7. These disturbances are divided into highly compacted areas, highly eroded areas, and areas where topsoil has been removed by heavy equipment, etc.

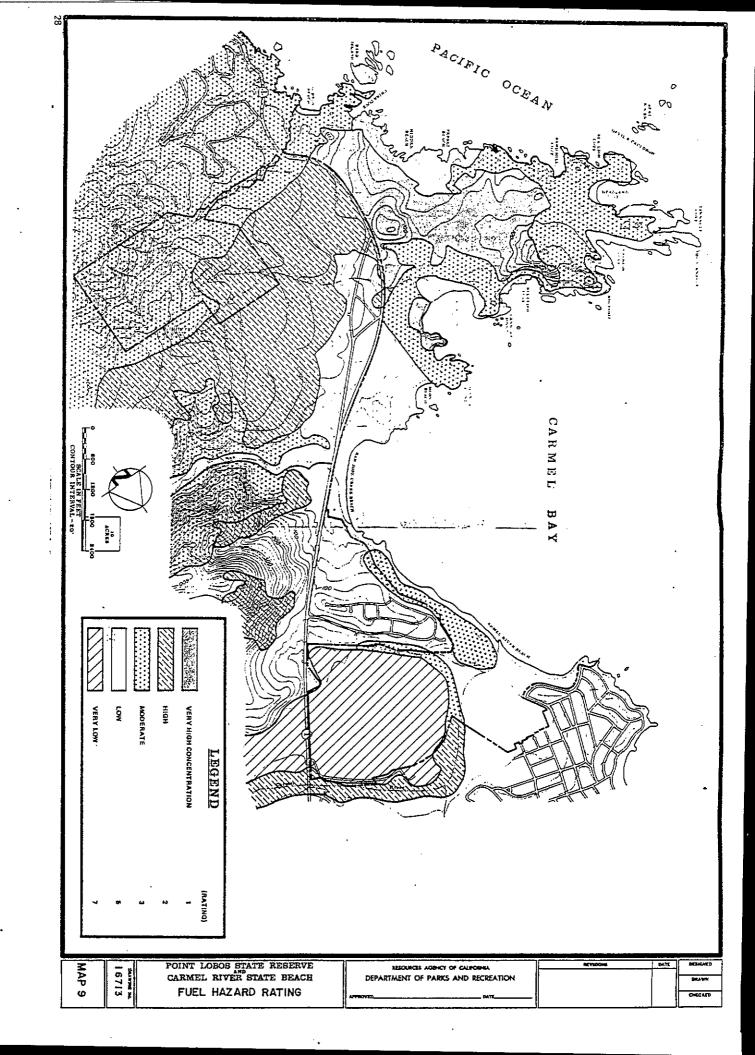


The increase in visitors has caused soil compaction along the coastline









The potential for <u>soil compaction</u> is mainly dependent on soil texture, structure, chemical composition, and soil moisture content. Clay content is usually the most important factor in soil compaction; the higher the clay content the greater the compaction potential. The type of clay present in the soil is also important, as is structure. Fine granular structures are more subject to compaction than blocky or prismatic soil structures. Soils high in organic matter are more subject to compaction than low organic matter soils. Wet soils are more subject to compaction than dry soils; thus soils are more subject to compaction due to human trampling in the winter and spring than in summer or autumn. Vegetation is also more sensitive to human trampling in the spring and autumn. Soil moisture content is a good indicator of seasonal allowable use intensity; that is, areas that have soils with high and very high compaction potential and sensitive vegetation may have to be closed during winter and spring months. Potential soil compaction ratings are shown on Map 8.

(4) Fire. There is an overwhelming body of scientific evidence on the importance natural fires played on the maintenance of California's natural ecosystems.

The absence of frequent, low intensity natural fires at Point Lobos State Reserve has created high fuel buildups, especially in the Monterey pine ecosystem. If low intensity ground fires are not reintroduced to the Point Lobos ecosystems, an intense wildfire is likely to occur which could destroy the last major remaining natural Monterey cypress groves, or the rare Gowen cypress dwarf woodland. For more detailed information on fire ecology, see the plant succession discussion on page 33 and Appendix G.

Map 9 presents fuel hazard ratings relative to fuel buildup and flamability of vegetation.

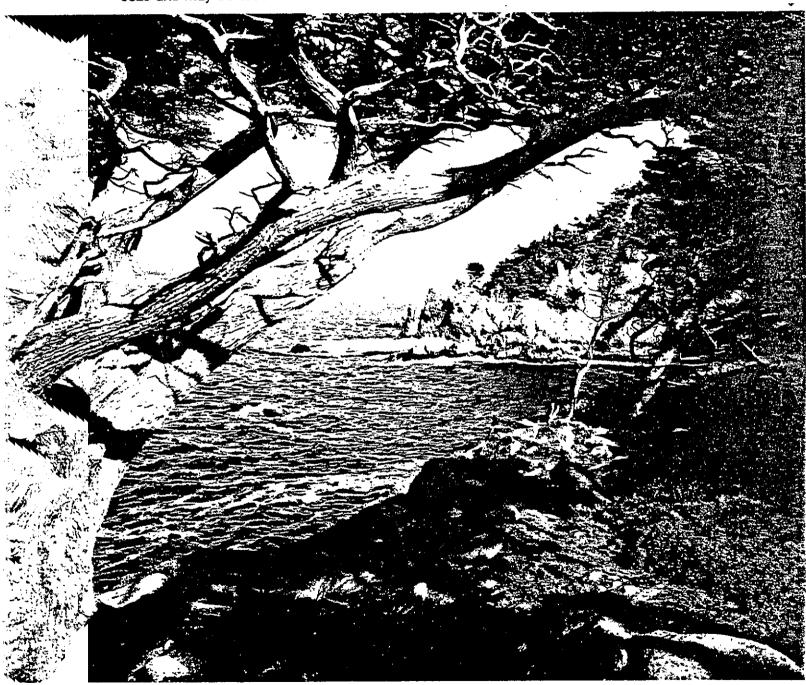
(5) Hydrology and Water Quality. Surface water flows from Carmel River can flood most of the Odello acquisition (which is in the floodplain), making the construction of permanent structures on the artichoke field unwise. Such structures may be placed above the floodplain if adequate space is found and the area is approved by a qualified engineering geologist.

Groundwater in the primary zone of interest is not potable, and leach fields in Point Lobos State Reserve have lateral movement at the soil/bedrock interface making septic tank filter fields unacceptable in the reserve or at Carmel River State Beach.

Oceanographic Factors

- (1) Upwelling. The presence of the Carmel Submarine Canyon causes seasonal upwellings of nutrient-rich deep seawater. This phenomenon makes Carmel Bay an extremely rich, diversified, and highly productive marine ecosystem of statewide, if not national, significance.
- (2) Water Temperatures of Point Lobos Coast and Carmel Bay. The water temperatures during upwelling are among the coldest found along the California coast. During upwelling periods diving requires relatively thick wetsuits to achieve any degree of comfort. Swimming is never comfortable and is consequently very limited in this area.

- (2) Turbidity. Carmel Bay is noted for its water clarity. Before the Carmel Bay area was extensively developed, 60-meter (200-foot) visibility was relatively common (personal communication, Lloyd Austin, Chief Diving Officer, University of California, Berkeley). With increased sedimentation and the addition of a sewer outfall into the bay, water clarity has dropped and good visibility is now 60 feet, with exceptional visibility being 100 feet.
- (4) Wave Exposure. The south shore and headlands at Point Lobos are exposed to heavy seas and may be treacherous to divers.



The Monterey cypress is found in its natural state in significant numbers only at Point Lobos. (Photo from Pt. Lobos, Interpretation of a Primitive Landscape.)

Natural Values Biotic Environment

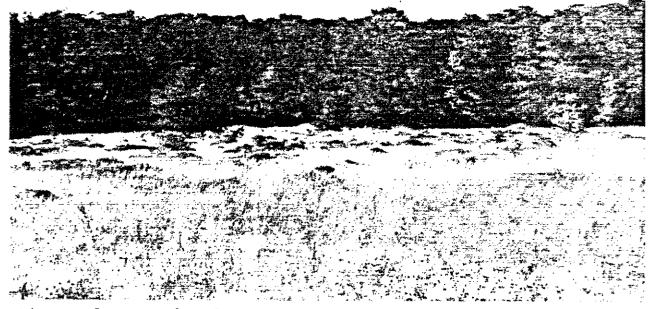
Rare and/or Unique Biota

One very important reason for preserving Point Lobos and the riparian and marsh areas of Carmel River State Beach is the extraordinary diversity of biota found there. Department scientists found the diversity per unit area higher than anywhere else they have examined to date in California. Moreover, of these plants and animals, an unusually large number are endemic to the Monterey area. A thorough analysis of the biotic communities can be found in the Inventory of Features, but mention is made here of those that are rare and/or unique to the area.

Six very rare and endangered plant taxa occur within Point Lobos State Reserve. One, Brodiaea versicolor, is thought to be a hybrid by some botanists and its taxonomic status is uncertain. The very rare and endangered Delphinium hutchinsonae has its type locality in the riparian zone of San Jose Creek Beach (type localities are extremely important to botanic and genetic research). There are also several very rare and endangered species that occur in the coastal chaparral; these include sandmat manzanita, Monterey manzanita and Monterey ceanothus.

Two extremely rare terrestrial biotic communities occur at Point Lobos State Reserve, the Monterey and Gowen cypress communities. The only remaining <u>natural</u> stands of Monterey cypress forest occur here in the reserve and a little further north along the coast between Pescadero Point and Point Cypress. The Gowen cypress woodland and Gowen cypress dwarf woodland occur on the Gibson Creek annex of the reserve and in the Point Lobos Ranch properties. The only other population of Gowen cypress is at Huckleberry Hill on the Monterey Peninsula.

Mound Meadow is the southernmost example of north coastal prairie (Heady, Barbour, Barry, Foin, Hektner, and Taylor, 1977). It is unique in that species composition and edaphic relations are different here than in the more northerly examples of this plant community. Also, the meadow has been free from grazing longer than any other prairie community in California.



Mina mounds at Mound Meadow - Point Lobos



Monterey pine forest and coastal scrub at Point Lobos State Reserve. (Photo by Gene Russell.)

Monterey pine forests occurred in three small coastal areas during pristine times - primarily near Monterey, but also to the northwest near Ano Nuevo Point and southeast near Cambria. Natural stands of Monterey pine forest are now preserved near Ano Nuevo State Reserve, at Point Lobos State Reserve, and San Simeon State Beach. Therefore, the extremes and means of this community are protected, an ideal situation for perpetuation of genetic and ecologic diversity.

The coastal chaparral is of a community type unique to the Monterey Peninsula (Griffin, in press). It has a discontinuous range from Fort Ord to Gibson Creek and contains several endemic species.

Riparian and marsh communities are extremely diverse and provide valuable wildlife habitats. Because riparian communities have been considered threatened by the Department of Fish and Game and less than one-half of California's coastal marshes remain in a fairly natural state, the Carmel River wetlands and riparian areas must be preserved.

Marine communities at Point Lobos State Reserve are dependent upon sandy and rocky substrate and show strong zonation. Perhaps the most fascinating marine community is the giant kelp submarine forest. This submarine forest occurs from central Baja California northward to Bear Harbor in Mendocino County. Although the range of giant kelp is much more extensive, it does not occur as a community dominant beyond these ranges. Many marine biologists agree that the marine communities at Point Lobos have statewide significance; Jacques Cousteau has stated that he hopes the area will remain one of the rare, intact areas in a generally dying marine environment. Further investigation of these communities is indicated.

Plant Succession - An Illustrative Study

The many biotic and abiotic factors unite at Point Lobos in an integrated environment that we are committed to preserve. To do this, carefully thought out management policies must be formulated; policies that are based on extensive scientific research.

One of the major policy decisions for the management of Point Lobos State Reserve is to preserve or to restore areas to their estimated natural climax vegetation wherever feasible. This requires an understanding of plant succession in the various ecosystems of the area. It is hoped that this discussion of plant succession at the reserve will give the reader an appreciation of: (1) the interrelationships that exist among the numberous environmental factors; and (2) the study areas involved in developing a sound basis for formulating management policy.

Plant succession refers to the gradual replacement of one plant community by another over very long periods of time until a relatively stable vegetation evolves which is known as the climax community. There are two types of plant succession occurring at Point Lobos, primary and secondary. Primary plant succession begins on bare rock surface and eventually, through periods of geologic time, develops into a normally stable climax community. Secondary plant succession occurs when a community is drastically disturbed. Under natural conditions, fire is the most frequent cause of secondary plant succession, though disturbances by humans such as logging, cultivating, grazing, and so forth may be responsible. Secondary successions are normally cyclic; that is to say, they tend to pass through sequential changes from pioneer types back to a climax type similar to the original.

To understand how succession is occurring at Point Lobos, the parameters that control succession must be analyzed. These parameters are time, geology, soils, climate, fire, and various biotic factors.

The term "relatively stable" refers to the dynamic equilibrium of a living system. It is <u>not</u> static; rather, changes continuously occur but balance each other in such a way as to display no apparent overall change.

Time: The Point Lobos landscape is geologically young, much of it having been uplifted above the level of the Pacific Ocean less than half a million years ago. The landscape is made up of plutonic rock, whose weathered shapes are represented in a series of terrace deposits. The terraces are wave-cut platforms formed on the upturned edges of the Paleocene Carmelo Formation which were deposited upon Porophyritic Granodiorite. A thin veneer of marine terrace deposits covered the platforms before the land emerged to its present level.

Primary plant succession began around 500,000 years ago with the emergence from the sea of a granodiorite basement rock in the upper Gibson Creek watershed. The first marine terrace emerged about 400,000 years ago. This terrace is rather obscure due to subsequent erosion, but is present on the ridgeline in the center of the Gibson Creek annex. The second marine terrace emerged from the sea about 300,000 years ago. This terrace is present in the lower portion of the Gibson Creek annex and near the summit of Big Dome. Marine erosion cut away most of this terrace leaving these two areas as islands; later, about 200,000 years ago, a third terrace emerged. It covers the central portion of the reserve extending out onto Point Lobos. A third sequence of primary plant succession was thus initiated. A fourth terrace emerged about 100,000 years ago. This terrace is represented by Carmelo and Mound meadows. The current elevation of these four terraces are 180 to 200 meters (600 to 650 feet), 90 to 115 meters (300 to 375 feet), 15 to 40 meters (50 to 125 feet), and between 3 to 12 meters (10 to 40 feet).

During the Wisconsin glaciation, about 17,000 years ago, sea level was about 90 meters (300 feet) lower than it is now. A post-glacial rise of sea level resulted from melting of the late Pleistocene continental glaciers of North America and Europe. This "Flandrian Rise" began about 14,000 years ago and continued rapidly until about 7,000 years ago. With the rise of sea level a lower (fifth) terrace was submerged. This terrace appears to be about 60 feet below current sea level.

The four terrestrial terraces represent four different time factors relating to geobioevolution at Point Lobos. As each emerged there began a new primary plant succession.

Geology and Soils: There are three major geologic formations that have influenced plant succession at Point Lobos by constituting the parent rock from which soils have formed. These are the Porophyritic Granodiorite of Monterey, the Paleocene Carmelo Formation, and Pleistocene undifferentiated marine terrace deposits. Soil and vegetation evolve together with their rate and composition dependent greatly on underlying parent rock or geomorphic form.

The Porophyritic Granodiorite of Monterey is exposed at Bird Island, Vierras Knoll, Point Lobos itself, Little and Big Domes, Whaler's Knoll, Viscaino Hill, and Granite Point. This deep-seated igneous rock is the core of the Santa Lucia Range and is quite resistant to erosion and weathering.

The Carmelo Formation includes conglomerate, sandstone, and shale units. The conglomerate is exposed at Coal Chute Point and Sea Wolf Point. Sandstone units are exposed at Little Mound and Mound meadows; the shale units are rather rare in the reserve, being exposed to soil formation only on small sections of Whaler's Cove and at Hidden Beach.

Pleistocene marine terrace deposits are found as soil parent material above Headland Cove and behind Gibson Beach.



Looking toward Bluefish Cove from Cannery Point.

Geomorphic forms are exposed to environmental forces and gradually change through a series of chemical and physical alterations. The rate of physical, chemical, and biological weathering is primarily dependent on the properties of the underlying rock. Granitic parent rock usually breaks down at a much slower rate than conglomerate, sandstone, or shales.

The process of differential weathering is beautifully illustrated at Point Lobos. Whaler's Cove, for example, was formed by wave action which wore the sandstone and conglomerate at a much greater rate than the granite which persisted at Cannery and Granite points. Differential weathering even occurs within a rather uniform formation such as the granodiorite of the cypress-covered headlands where wave action has worn chutes and caves into weaker portions of the rock. Although these are dramatic examples of erosive weathering, they can be used to illustrate the rates of parent rock alteration during soil formation.

<u>Climate</u>: Climate influences both the types of communities and their rates of growth during plant succession. Moist climates typically have faster successional rates than do dry climates. The macroclimate at Point Lobos dictates what is known as the climatic or regional climax community. Here the Monterey pine forest would be the overall regional climax community, but microclimatic effects and other environmental factors have an overriding influence in certain smaller areas. This results in a mosaic composed of Monterey pine forest and smaller enclaves of special plant communities. For example,

the effects of salt-containing wind are important to the survival of the Monterey cypress forest. Monterey cypress are more resistant to salt and wind than are Monterey pine; therefore, the cypress can successfully compete with the pines on the more exposed headlands at Point Lobos. Wind also has a well-defined effect on the vegetation in such areas as The Pass where salt accumulation is evident in the soil profile, as is indicated by the abundance of salt grass in the coastal bluff and scrub communities.

Fire: Fire has played a basic role in the evolutionary development of almost all California's plant communities and is also an important factor in the successional patterns at Point Lobos. Fire is the most important natural factor in establishing secondary plant succession. Around 1,500 lightning fires occur each year in California. The intensity of a fire determines, to a great extent, its effects on the ecosystem. Intense fires may destroy all or nearly all the vegetation, resulting in physical and chemical changes in the soil. Light ground fires often have a stimulating effect on plant communities as they cleanse the soil of insects and disease organisms, and the smoke kills spores of disease organisms, such as blister rust. Fires also prepare a seed bed and open the cones of cypress and certain pines. Some seeds will not germinate until subjected to intense heat. Climax communities that are dependent on periodic fires are known as pyric climax communities. The giant sequoia forests of the Sierra Nevada are probably the most well-known example of a pyric climax community.

Primary successions are illustrated in figure 1 and secondary successional pathways are shown in figure 2 (Barry, 1974 and Barry, 1977). In the absence of fire, the meadows will disappear and eventually Monterey pine forest will invade the entire coastal portion of Point Lobos, unsightly deadwood will continue to accumulate, and the overgrowth will increasingly mar scenic views. Species diversity will continue to decline under the current nonfire regime. Fuel buildups are very high, and fire danger will increase with the years.

Biotic Factors: The biotic factor is probably the most elusive and poorly understood parameter in plant succession. Plants and animals, including man, affect ecosystem genesis in a great number of ways.

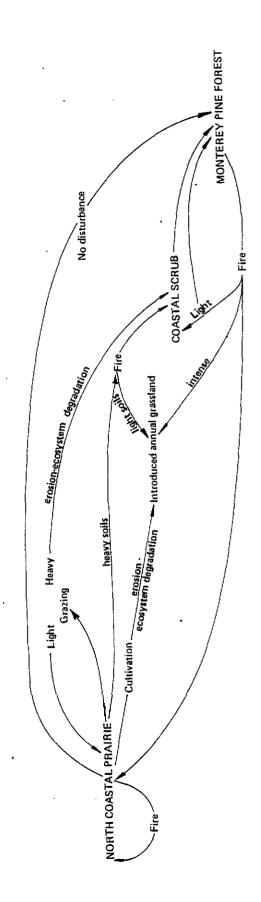
Plants can invade an area and change the type of community drastically. For example, Monterey pine is a fast growing, short-lived tree. If a pine forest invades a prairie area, which characteristically has a dark, deep and rich soil, the conifer will gradually change the physical and chemical characteristics of the soil. Pine needles fall, adding organic matter to the soil; however, at the same time, the acid-containing needles lower the phof the soil. This acidity releases nutrients from the soil which are gradually leached from the topsoil. This loss of nutrients together with shading of lower growing vegetation causes a drastic change within the community. Normally this is a very slow process but it appears to be occurring at a very rapid rate at Point Lobos. We have tested soils in Carmelo Meadow where pines have invaded some time after 1934. These tests show that the process is already beginning, although the pines have been there less than forty years. As podzolization increases, the exclusion of a number of species occurs. Eventually very little understory is present. This is well illustrated in the Monterey pine forest southwest of the entrance station.

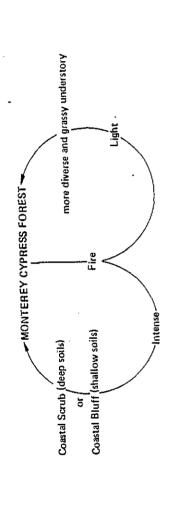
Animals may have a great effect on the direction plant succession takes. Deer may completely exclude some species. When deer populations become out of balance, as is the case in the Monterey area, the effects on species composition of a community can be severe. The "ice cream" plants are the first to go, and eventually the composition of the community will be reduced to plants that are nonpalatable to deer, like Monterey pine.

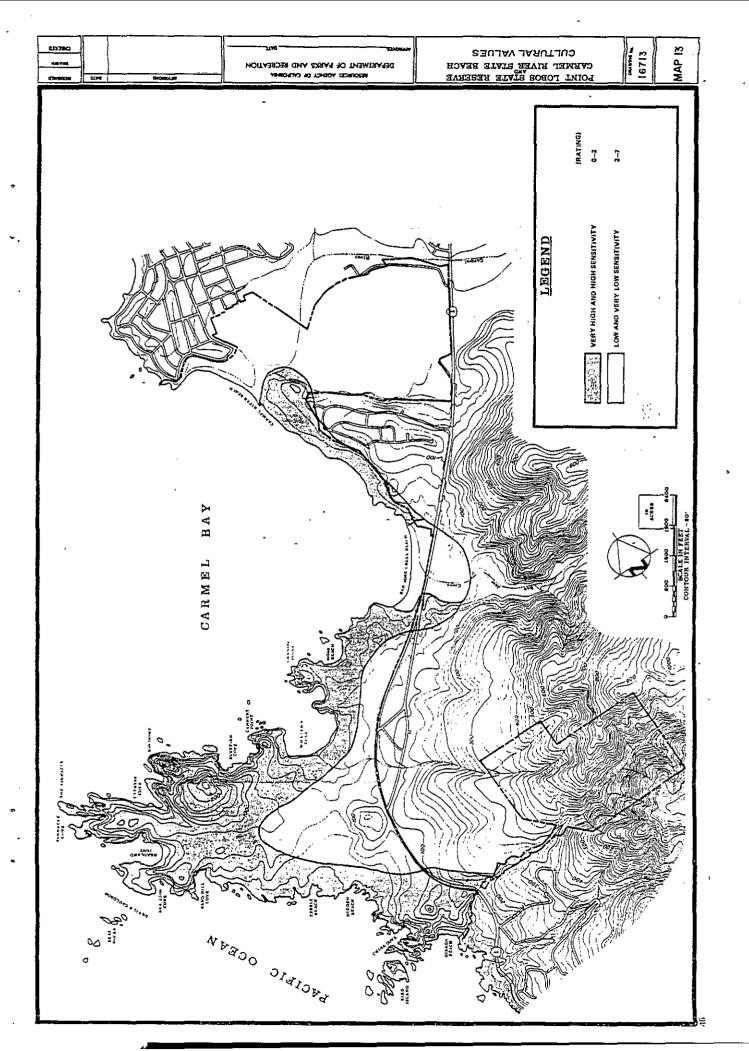
FIGURE 1
PRIMARY SUCCESSIONAL PATTERNS AT PT, LOBOS SR
(Bare Bock to Present)

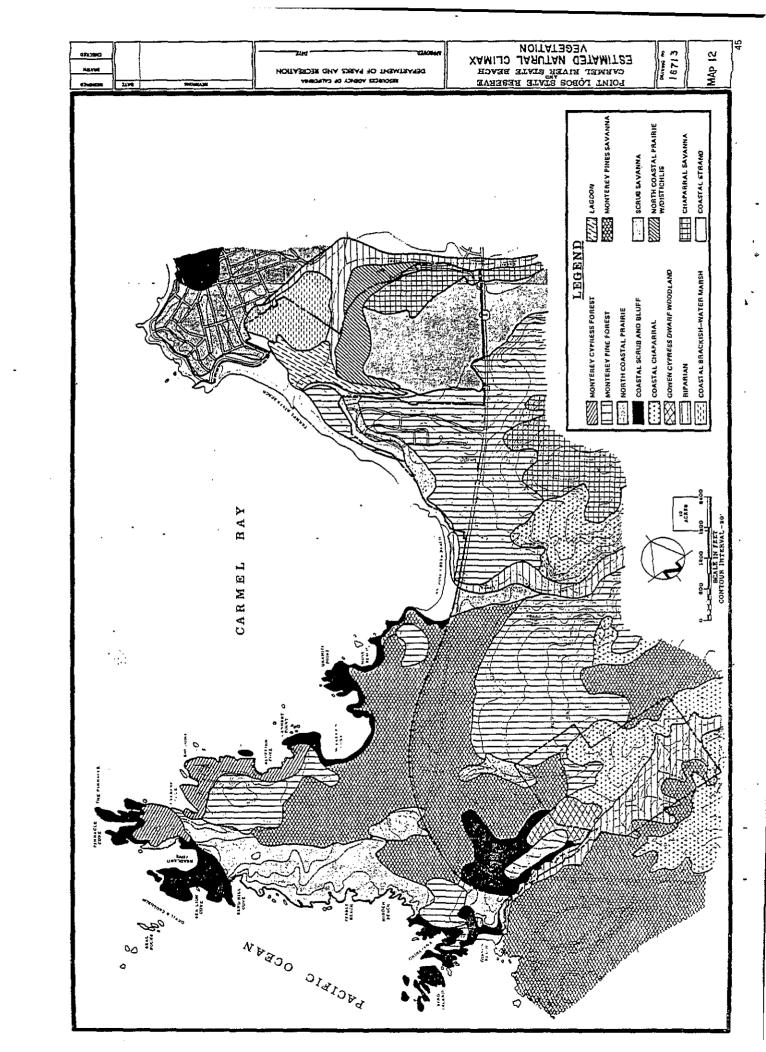
	1 1				•	•	
	Present	Monterey Pine Forest Monterey Cypress Forest	Sheridan Coarse Sandy LoamCoastal Chaparral and Gowen Cypress	Monterey Pine Forest Elkhorn Fine Sandy Loam Monterey Pine Forest Monterey Pine Forest	San Andreas Fine Sandy Loam Coastal Scrub Lockwood Shaly Loam Coastal Scrub	San Andreas Gravelly Loam Coastal Scrub Preiffer Fine Sandy Loam North Coastal Prairie, Introduced Annual Grassland Annual Grassland Coastal Scrub Coastal	
(Bare Rock to Present)	100,000 Fourth terrace		Coastal Prairie	Coastal Prairie —— icrub —— Coastal Prairie — icrub —— Coastal Prairie —	1 1 1	Sandstone Sandstone Sandstone Sandstone	Siltstone ————————————————————————————————————
	200,000 Third terrace	Coastal Prairie steep topography)	aphy) Coastal Scrub	Coastal Scrub Coastal Scrub Coastal Scrub	Shafe Scrub	·	Siltst Recent Marine Terrace Deposits
	300,000 Second terrace	Coastal Scrub Coastal (high natural erosion, steep topography)	(high natural erosion rates due to steep topography) Carmeto Formation Conglomerate	Sandstone			
	400,000 First terace	wederation Coastal	Coastal Bluff (high natural erosio				
	Time of emergence years 500,000	ranodio	Monterey —				

FIGURE 2 SECONDARY SUCCESSIONAL PATTERNS AT PT. LOBOS SR



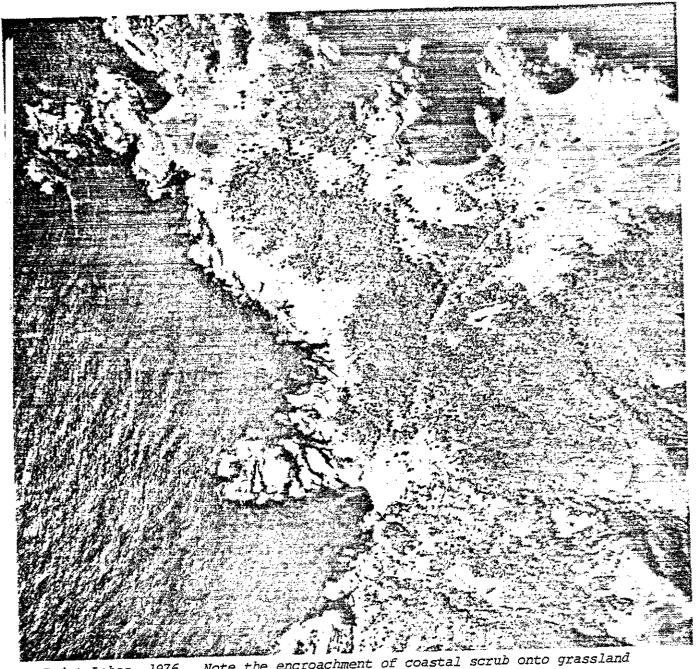




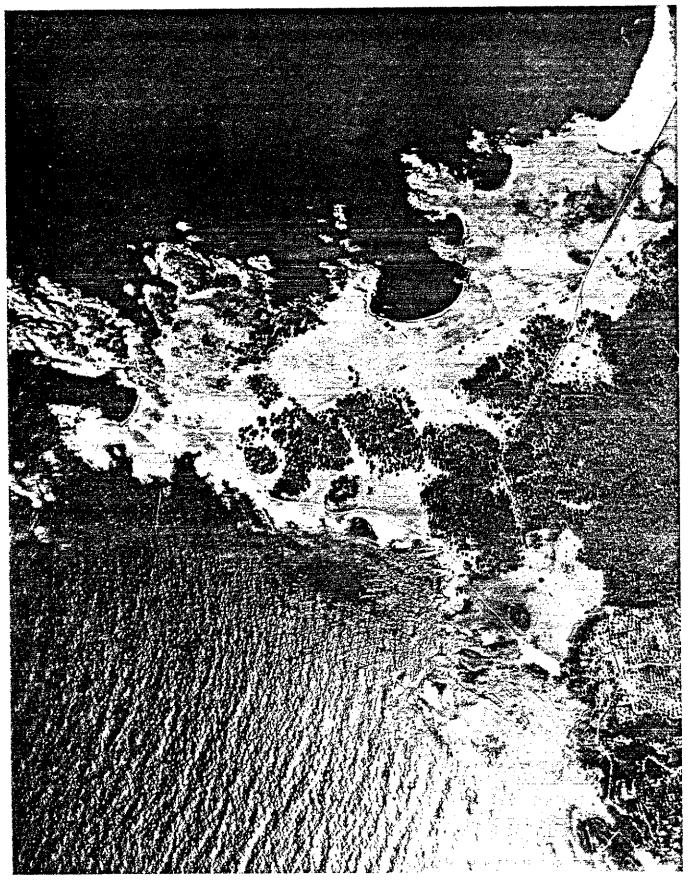


The long-term vegetation of an area determines the phase of soil that will be formed beneath it. This is the primary factor used to determine what the pristine vegetation (the relatively stable climax plant community) of an area was. The natural climax vegetation map is generalized with more specific designations made on the ecological management units map. By reviewing historical photographs and narratives, field analysis, and the use of USDA Soil Conservation Service soil maps, the estimated natural climax vegetation map of Point Lobos State Reserve and Carmel River State Beach was drafted (Map 12).

This discussion of plant succession at Point Lobos State Reserve illustrates the many factors that must be carefully considered before management policy decisions can be arrived at.



Point Lobos, 1976. Note the encroachment of coastal scrub onto grassland areas.



Aerial of Point Lobos, 1936.

Man has had the greatest influence on the direction of plant succession. The impact of native Californians was much less than that of the Europeans.

Indians have inhabited California for at least 10,000 years (possibly as long as 40,000 years) and have probably occupied Point Lobos for several thousand years. Thirty-five archeological sites are present at Point Lobos. Indians had a great influence on the pristine vegetation of Point Lobos. Although very little is known about the Indians that occupied Point Lobos, it is known that the California Indians frequently used fire as a means of keeping the forests and rangelands open. They also accidentally started fires which often spread great distances from their villages.

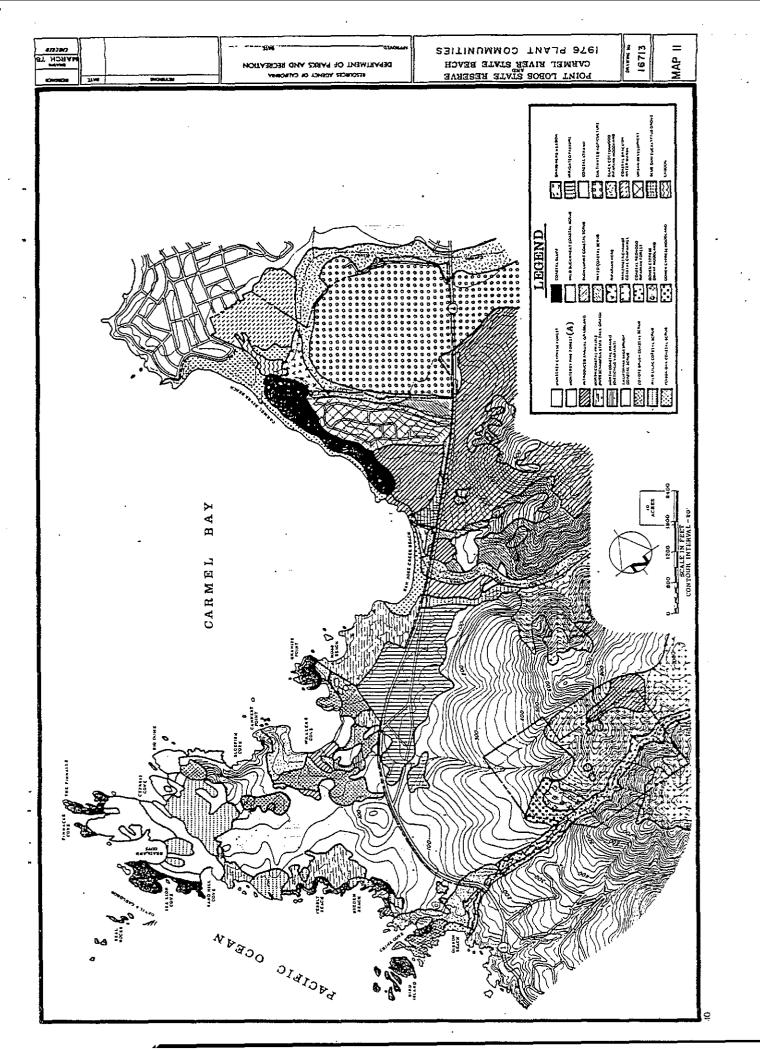
Village sites exhibit concentrations of organic debris and typically form deep rich soils which are mapped as "kitchen middens" by soil surveyors. Midden soils are very dark brown or black in color with numerous shell fragments within the profile. These soils are high in calcium and typically form a caliche layer due to leaching of calcium compounds through the soil profile. An interesting plant association has evolved on several such sites at Point Lobos. Some middens are covered with annual grasses such as ripgut and wild barley, with solid strands of monkey flower fringing the edge of the middens. This is usually surrounded by the mixed coastal scrub community.

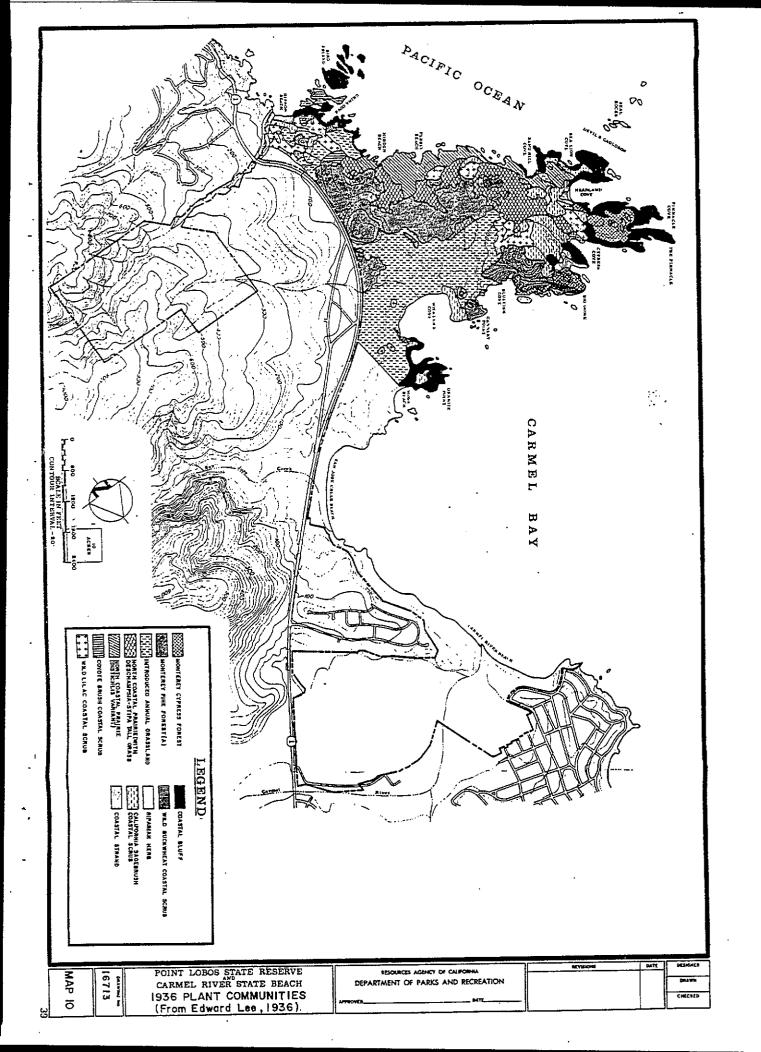
European man's first direct impact on the vegetation probably occurred when Sebastian Viscaino entered Carmel Bay in 1602-3. A shore party is known to have camped near the mouth of Carmel River. Exotic seeds possibly escaped or European grains used as foodstuffs may have spilled and thus entered the environment. The early explorers introduced a new floral element to California consisting mainly of the Mediterranean annual grasses. Grasses and herbaceous plants from the Mediterranean region were very successful and spread rapidly throughout most of California. Thus, many native grassland communities of the state were altered or displaced, often before Europeans reached the environs. The introduced annual grassland community has been established for several hundred years at Point Lobos. Undoubtedly the reserve was probably first subjected to grazing before 1785 when it was Mission land. Native grass species found at Point Lobos evolved under light grazing pressures from deer and the migrating herds of pronghorn antelope. The native grasses could not compete with the introduced Mediterranean annual grasses which had evolved under heavy grazing conditions. Thus, the introduced annual grasslands must have intensified their position and distribution with the onset of domestic grazing.

Cultivation first occurred around 1862 when garden crops were grown in Carmelo Meadow by whalers. Cultivation apparently occurred intermittently up until the establishment of the reserve in 1933.

Thanks to the efforts of Dr. Herbert L. Mason and Dr. Edward Lee, there is a rather precise picture of the vegetation present at Point Lobos at the time the reserve was established. Dr. Lee developed a vegetation map of Point Lobos in 1936 (Map 10). The vegetation was remapped in 1976 using a combination of remote sensing and field techniques (Map 11). More intense field studies are needed to substantiate species changes; major species and physiognomic changes are presented on the maps. The most striking changes are the invasion of introduced annual grasslands and north coastal prairie communities by coastal scrub which, in turn, is being invaded by Monterey pine forests.

The changes in these communities are illustrated on the series of vegetation succession maps (Maps 24-29, Appendix H) which show the distribution of each of these communities in 1936 and 1976.





Cultural Values

Prehistoric and Protohistoric Factors

Thirty-five sites of local prehistoric culture occur at Point Lobos State Reserve and Carmel River State Beach. These sites are highly significant and extremely sensitive nonrenewable cultural resources. The cultural sensitivity map (Map 13) is a general delineation of these site areas. (Actual site records are in the appendices of the Inventory of Features, but the specific locations of sites must be kept confidential for their protection.)

From the south end of the sand spit at Carmel River State Beach south, through the Hudson property and around the rugged shore of Point Lobos to Gibson Creek, is an almost continuous cultural deposit so rich in shell that the ground surface glitters in the sun. Only the southernmost area, above Gibson Creek, shows evidence of having been a village. The other thirty-four deposits constitute one of the most dramatic physical remains of a specialized economic pattern known in California. Tools noted include knives, flakes, and cores of chert. The tools are all of types that could have been used in shellfish processing, as well as numerous other activities. There is a single mortar hole in a bedrock outcrop at the mouth of the Carmel River and at least two mortar groupings of unknown magnitude lost under the poison oak above Gibson Creek. While all of these deposits could be prehistoric or ethnographic Costanoan, it is probable that some of the mussel and abalone debris can be attributed to Chinese and Japanese harvesting activities. Chinese ceramics have been noted at one of the sites.

There have been no systematic archeological excavations in the area surrounding Carmel River State Beach and Point Lobos State Reserve. Therefore, there is no real understanding of the data potential of the shell deposits in the area.

The entire San Mateo coast and most of the Monterey coast lie within the territory of the Costanoan Indians. At European contact, Costanoan territory stretched along the coast from San Francisco south to Point Sur. They spoke a Penutian language in seven dialects. Their subsistence was based on a mixture of hunting and gathering with most anything edible being hunted, trapped, or harvested up to and including beached whales.

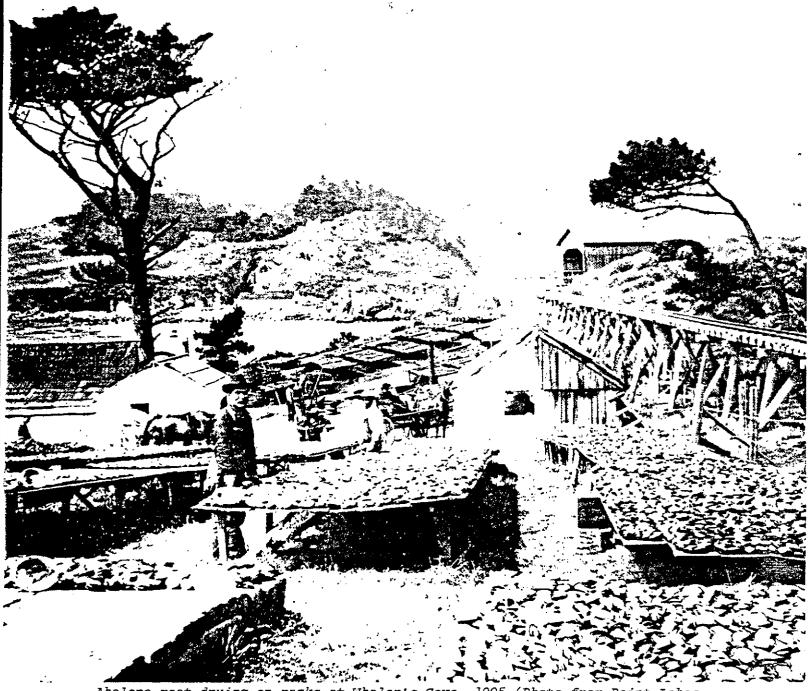
The average village supported a population of 20 to 40 people living in five to eight conical tule mat or brush covered houses. Each village had a large sweat lodge but no large ceremonial structures are known.

Population at European contact may have been as high as 12,000 but more likely was no more than 8,000 to 10,000.

Historic Factors

Historic resources include all of Whaler's Cove including the cabin, several known sand quarries, a granite quarry, a coal and gravel loading chute, and the flat associated with the abalone processing industry. The Hudson House is of no particular historic significance.

The only possible historic structure remaining at Point Lobos State Reserve is the Whaler's Cottage. It is in a fair state of repair but a number of modifications (gas heat, running water, etc.) have been made. The history of the Whaler's Cottage is unclear. It is not very old, 1897 to 1898 at most. The present structure is made of mostly newer materials.



Abalone meat drying on racks at Whaler's Cove, 1905 (Photo from Point Lobos, Interpretation of a Primitive Landscape.)



Boat anchoring device above Whaler's Cove.

For most of the history of Alta California, Point Lobos was grazing land for Mission Carmel. From secularization in 1835 until 1888 there were numerous claimants of the land, including Mexican soldiers who were given the land in payment for service. According to local folklore, one parcel of land changed hands in a hotly contested card game.

During the American period Chinese, Japanese, and Portuguese fishermen worked the local coast. Cattle were grazed throughout the area and miners quarried granite, sand, and coal. The recognized claimants formed a company in 1889 to further develop the coal mine. They also divided part of the Point Lobos area into lots and pushed ahead with plans to open a resort community. A few lots sold but the endeavor folded with the depression of 1891.

A civil engineer named A. M. Allan was brought in to manage a local coal mine. In 1898 he bought 259 hectares (640 acres) and began to purchase the lots sold earlier. In 1898 or 1899 Allan entered into a business agreement with Mr. Kodani, a local Japanese pioneer, and started the Point Lobos Canning Company to fish for abalone. The abalone fishing and canning became the major business in the area for thirty years. It should be noted that although millions of pounds of abalone were processed at Whaler's Cove, all of the shell was sold (mostly for buttons) so that this activity should not have significantly altered the condition of the previously mentioned cultural deposits. After World War I, movie companies discovered the scenic grandeur of Point Lobos and returned again and again to use it as an outdoor set. Sets were quite often burned when no longer needed. Sand Hill was apparently denuded by the burning of a set for a movie made during the twenties and the vegetation has not yet completely reestablished itself.

Two years after his death, Allan's heirs sold the property to the State of California and later donated a memorial cypress grove to the state.



Cannery Point and the abalone cannery at Whaler's Cove, May 1931. (Photo from Point Lobos, Interpretation of a Primitive Landscape.)

Recreational Values

Point Lobos State Reserve has outstanding passive recreation values, such as sightseeing, photography, painting, nature study, picnicking, etc. Active recreation activities include walking for pleasure, hiking, bicycling, swimming, SCUBA diving, and jogging. Human impact due to the current intensity of visitation has caused irreversible impact on many of the cultural and natural resources of Point Lobos State Reserve.

Carmel River State Beach is used for all the abovementioned recreational activities. It is the most heavily used SCUBA diving beach in Northern California.

The State Water Resources Control Board has adopted water quality control plans for the control of wastes discharged to ocean waters (Ocean Plan). These plans require the designation of Areas of Special Biological Significance (ASBS) to afford special protection for marine life by prohibiting waste discharges within the areas. Carmel Bay has been designated such an area. However, the Board has made a special allowance to the Carmel Sanitary District (Resolution No. 78-34) for discharge into the Carmel Bay ASBS, not to exceed 2.4 million gallons per day average wet weather flow and dry weather flow (May through October). This discharge is to be phased out within three years after the initial operation of the selected District sewage plan. This plan has not yet been adopted.

The Carmel Sanitation District's sewer outfall, off the north shore of San Jose Creek Beach, may prove to be hazardous to the health of recreational divers. Professional divers for the Department of Fish and Game are not allowed to dive in the outfall areas without special authorization and equipment. Most recreational divers are not aware of the outfall, located in a kelp bed at about 14 meters (45 feet) depth and only 180 meters (600 feet) offshore.

Ecological Limitations on Land Use

All rational land use planning must consider the inherent limitations of the land, air, and water. These limitations are dependent on environmental factors, including cultural factors.

The abiotic or physical environmental parameters are measured with less difficulty and more accuracy than are the biotic environmental parameters.

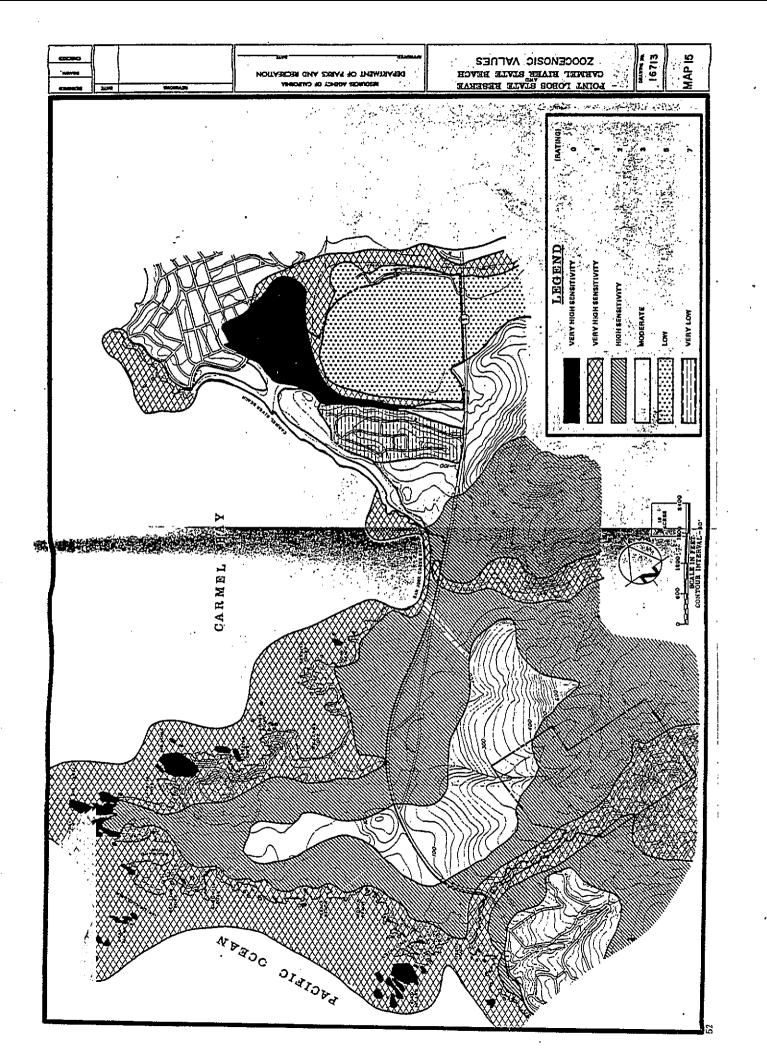
Abiotic parameters important to land use at Point Lobos State Reserve and Carmel River State Beach are geologic, paleontologic, pedologic, climatic, and hydrologic factors. Biotic parameters include phytocenosic and zoocenosic factors.

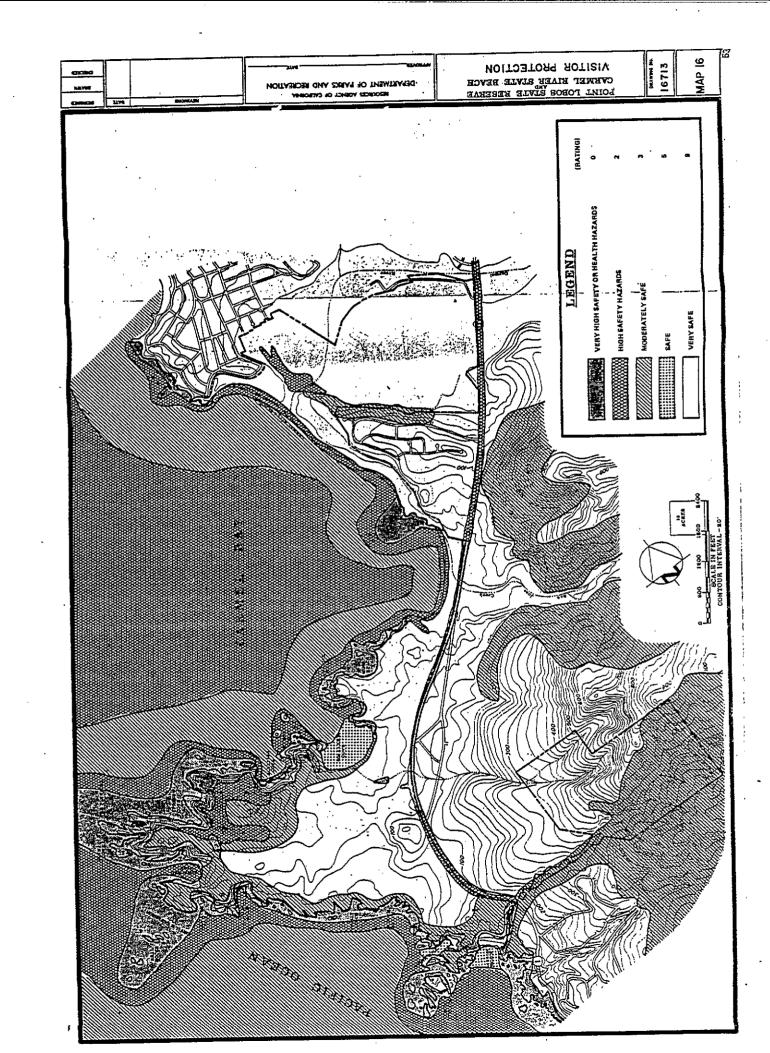
Limiting geologic factors include geomorphic stability, seismicity and relief. Relief has long been considered by land use planners in the form of slope maps. However, geomorphic stability - the inherent structural strength of geologic formations - generally has not been considered. A great deal of work has been done on seismic safety hazards.

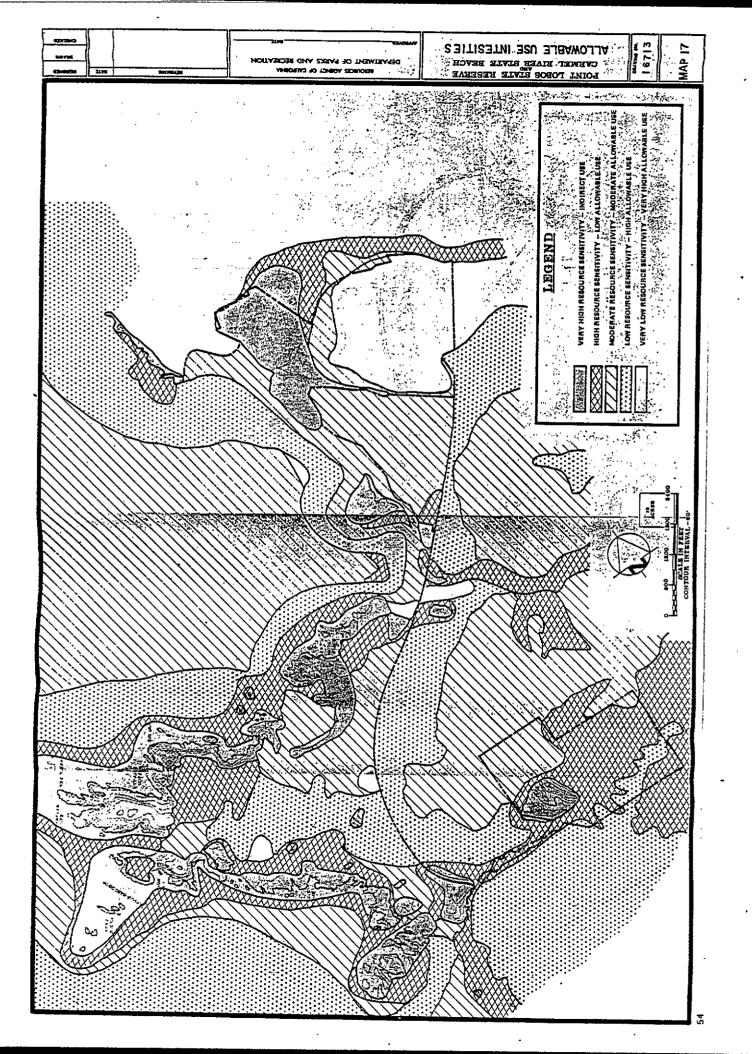
Paleontological strata must be assessed for potential new fossil discoveries and the possible obliteration of fossil sites by construction activities.

Important limiting pedologic (soil) factors include the physical properties of soils, such as depth, water-holding capacity, permeability (of the least permeable horizon), texture, structure, compactibility, and surface wetability. These physical properties, to a large part, determine runoff and subsequent erosion. Physical properties of soil series have









been measured for a number of soil series bench mark soil profiles; these may not be representative of those in the unit, but are the best data available.

Hydrologic parameters are important in that pollution of groundwater can occur to groundwater levels by septic tank filter fields, while surface and groundwater levels can be depleted by drilling wells or tapping springs.

Phytocenosic parameters include the fragility, the regeneration rate and the transpiration rate of the vegetation. A relative fragility rating for the different vegetation types of Point Lobos is shown on Map 14.

Zoocenosic parameters include the tolerance levels of wildlife to human activity, stability of wildlife populations, and the human factor, i.e., level of current human disturbance to the area (Map 15).

Important ecologic parameters include niches of rare and/or endangered plants and animals, unique or rare ecosystems (such as the Monterey cypress forest and the Gowen cypress dwarf woodland), and superior examples of ecosystems of regional or statewide significance (such as the <u>Deschampsia-Stipa</u> tall grass prairie. All these are included under ecological uniqueness.

Cultural factors should also be considered in land use planning. Cultural areas include historical and archeological sites. The sensitivity of these sites and the potential long-range social loss due to their destruction must be assessed. Sensitivity of sites depends on their physical location in relation to natural environment parameters and proximity to developed areas.

Allowable Use Intensity

All of these ecological limitations on land use, plus esthetic values and visitor protection factors (Map 16), are used in determining the allowable use intensity for specific areas in units of the State Park System. The allowable use intensity is in turn used as a basis for determining the unit carrying capacity, the actual number of persons that will be permitted to use a particular area at any one time (see Land Carrying Capacity section of General Plan, page 69). These determinations are necessary to enable us to adequately protect the resources from degradations that would result from overuse of an area. A detailed explanation of how the allowable use intensity is calculated is found in Appendix F; only a brief summary will be given here.

A total of eleven parameters (slope, geomorphic stability, soil erodibility/compaction, climatic factors, hydrologic limitations, phytosenosic and zoocenosic parameters, ecological uniqueness, cultural sensitivity, esthetic values, and visitor protection) are considered. Each parameter is assigned a numerical value according to significance, sensitivity, or hazard as follows:

Very high	0		
High	0.1	-	3.0
Moderate	3.1	_	6.0
Low	6.1	-	8.0
Very low	8.1	_	9.0

Some judgements are necessarily subjective and will remain so until sufficient ecological monitoring and baselines are established. However, the judgments are made by ecologists whose wide experience lends substantial weight to these determinations.

A mathematical formula is used to derive a composite value of the influence of all eleven parameters on a particular area and and computer processing yields a map of the whole area that indicates the sensitivities of individual areas (Map 17). Table 2 shows representative uses that may be allowed in the areas of various ecological sensitivities.

Special note should be made of the use of zero as one of the ratings. Because a mathematical formula is used, a rating of zero will automatically result in a determination of such high sensitivity for an area that the area should theoretically have no allowable use. Such areas might be niches of very rare and endangered taxa, archeological sites, or areas of extreme physical hazard to visitors. As a practical matter, it is possible to permit ranger-guided tours of some special areas so that the public will not completely be denied access to sites of significant interest.

Human impact is everywhere evident on the land portion of the reserve. It is especially noticeable on bluff edges which are not closed off by guard rails. Impact is very high along the south shore between Sand Hill and Vierras Knoll. Soils and vegetation show the greatest impact around parking lots, especially between the bluffs and the parking areas along Little Mound Meadow and Mound Meadow.

Carmel River State Beach has only one parking lot, which is just east of the lagoon, and north of the mouth of Carmel River. Human impact is heavy along the east shore of the lagoon. Some trails are worn into the drier fringes of the marsh and trails disect the stabilized dune land south of the river mouth. San Jose Creek Beach has no formal parking facilities; however, large numbers of cars are parked parallel to Highway I for several miles. Impact on riparian ecosystems and bluffs to the south are notable.

The Carmel Sanitation District's sewer outfall is at 15 meters (45 feet) depth off the rocky point that separates Carmel River Beach from San Jose Creek Beach. The impact on the marine biota of Carmel Bay and Point Lobos State Reserve is great enough that the State Water Quality Control Board had issued a cease and desist order as of 1980. However, the District has convinced the Board that the outfall is not affecting the marine ecosystems of Carmel Bay. The Board gave the District a special variance in May 1978. Presently, an olive brown effluent discharges forth into the clear waters of the bay - its impact uncertain and probably unmeasurable due to the great number of variables present and the absence of baseline studies. (No baseline studies are available before the outfall was established in the bay.)

Currently the carrying capacity at Point Lobos State Reserve has been established in terms of the number of cars allowed (150 cars at any one time). The 150-car limit is the total parking lot carrying capacity; when this limit is reached cars are turned away from the reserve (31,169 in 1976), but walk-in or bike-in visitation continues. With the threat of the Point Lobos Ranch development, walk or bike-in visitation will likely more than double. Several years ago a five-team diver limit was established on a judgment basis; when no visible impact on the areas opened for diving could be found, the limit was doubled.

The number of visitors at both Point Lobos State Reserve and Carmel River State Beach is far above the carrying capacities deemed necessary to maintain in order to perpetuate the scenic, natural and cultural resources found in these units. <u>Under current levels of visitation gradual</u> and irreversible environmental damage will continue, and the beauty that was Point Lobos will be lost to future generations. Careful planning of trails and the removal of vehicular access to Point Lobos will tend to alleviate the impact. Seasonal closures will be necessary for sensitive areas.

Table 2

Allowable Uses for Areas of Particular Ecological Sensitivities

Ecological Sensitivity Allowable Uses Very High (0 rating) Indirect Uses: Interpretation (off-site) Movies (off-site) Photography (off-site) Ranger-guided tours (on-site)* Sightseeing (off-site) Television (off-site) High (0.1-3.0 rating) Light Intensity Uses: Beach-walking Birdwatching Diving (non-sport) Hiking (individuals) Nature study Painting (artistic) Photography Quiet water boating (canceing, rafting, floating) Scenic observation Sunbathing Swimming (informal) Moderate (3.1-6.0 rating) Medium Intensity Uses: Bicycling Fishing Hiking (in groups) Parking (unpaved) Picnicking (maximum of 2 sites/acre) Sailing Sport diving Low (6.1-8.0 rating) High Intensity Uses: Parking (paved) Picnicking (3 or more sites/acre) Roads (paved) Staging facilities for sport diving 5. Very Low (8.1-9.0 rating) Very High Intensity Uses:

None in area

^{*}When resources can be adequately protected

DECLARATIONS OF PURPOSE

Point Lobos State Reserve

The purpose of Point Lobos State Reserve is to perpetuate forever, for public enlightenment, inspiration and esthetic enjoyment, an area of unique natural beauty and ecological significance including the Monterey cypress-covered headlands, unique Gowen cypress pygmy forests, Monterey pine forests, meadows and prairies, rocky shorelines, sandy beaches, and ecologically unique underwater areas, together with the related natural, scenic, and cultural values and the aquatic and terrestrial flora and fauna in an essentially pristine state.

California Departments of Parks and Recreation and Fish and Game are to manage the aquatic and terrestrial resources as a composite whole, preserving the primitive character of the reserve in accordance with sound ecological principles; to interpret these resources for the people, and to provide necessary services and compatible facilities consistent with the preservation of scenic and ecologic values for the enjoyment of the reserve by visitors.

Carmel River State Beach

The purpose of Carmel River State Beach is to provide the people, forever, for their enlightenment, inspiration, esthetic enjoyment, and recreational pursuits a combination of beautiful sandy beaches and rocky bluffs, including the coastal strand, coastal bluff and coastal scrub communities, and the preservation of wetlands formed by the Carmel River, in an essentially natural condition together with the outstanding related scenic, natural and cultural values including the flora and fauna of Carmel Bay, Carmel River wetlands, and the coastline of Carmel Bay.

DECLARATIONS OF MANAGEMENT POLICY

Point Lobos State Reserve

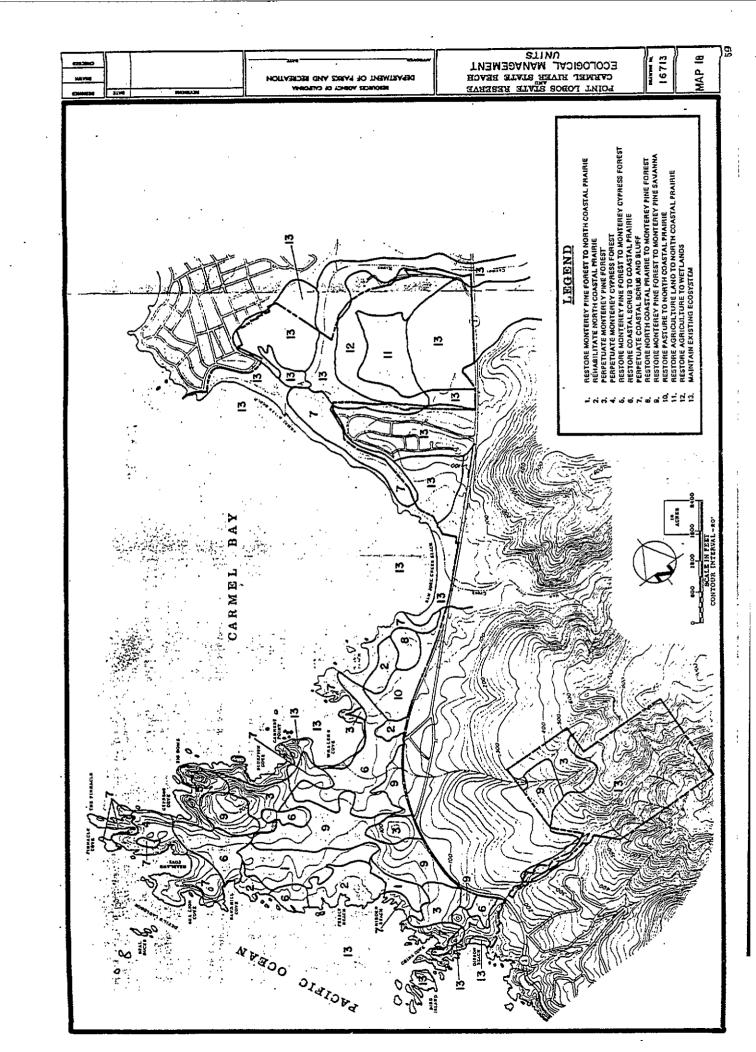
Ecosystem Management

Ecosystem management shall be the major management effort within the preserve and detailed resource management programs shall be developed for the various ecosystem units. The general goal will be management toward the pristine state, that is, the state the ecosystems would have achieved if European man had not interfered.

Map 12 delineates the estimated natural terrestrial ecosystems that existed prior to European influence. Particular recommended measures to be taken in regard to specific vegetation patterns are shown on Map 18. (Please see also the discussion on Plant Succession, page 33.) Specifics for the individual programs will require further research. Achieving these states will, of course, take many years, but such a program is essential if we are to preserve the integrity of the reserve.

Ecological Monitoring Program

An ecological monitoring program shall be established and perpetually maintained in order to evaluate and correct human impacts on natural resources due to facility development, recreational use, resource management programs, and exterior influences. It may be necessary to close certain sections of Point Lobos on a cyclical basis so that the reserve's natural environment can be fully restored.



The achievement of our prime purpose—preservation of the reserve's resources in a natural state—depends entirely on establishing such a monitoring program and making certain that it is implemented to its full extent continually. The accumulation of scientific baseline data is a prerequisite for developing programs for resource preservation specific to this area.

Air and water quality shall be monitored from eight or more mobile and/or permanent stations set up within the reserve. Air quality stations shall be established at the Allan Memorial Grove, Carmello Meadow, Mound Meadow, and the Gowen cypress grove. Water quality monitoring stations shall be established at Moss Beach, Whaler's Cove, Bluefish Cove, Headland Cove, China Cove, and Gibson Beach. Monitoring stations shall be constructed or located in a manner consistent with preserving scenic and natural resources.

Marine terraces and significant paleontological sites shall be protected from destruction by human impact. Paleontologic sites shall be protected from development and investigated for scientific values. Mound and Little Mound meadows are unique ecological and geological resources that shall be protected.

Edaphic monitoring shall include permanent quadrants and transects of statistically significant (99 percent level) numbers within each soil-vegetation unit within the reserve. Soil physical and chemical analyses as well as qualitative and quantitative vegetation analyses shall be performed for determining the effects of various use intensities and resource management programs. Plant opal and other studies shall be conducted on representative soils in order to determine the pristine state of the vegetation.

Biotic monitoring shall include plant succession and changes in terrestrial and marine plant and animal communities due to human impact, natural fluctuations, and resource management programs. Biotic monitoring is especially critical for ecological niches of very rare and endangered taxa, unique or excellent examples of California terrestrial, and marine ecosystems.

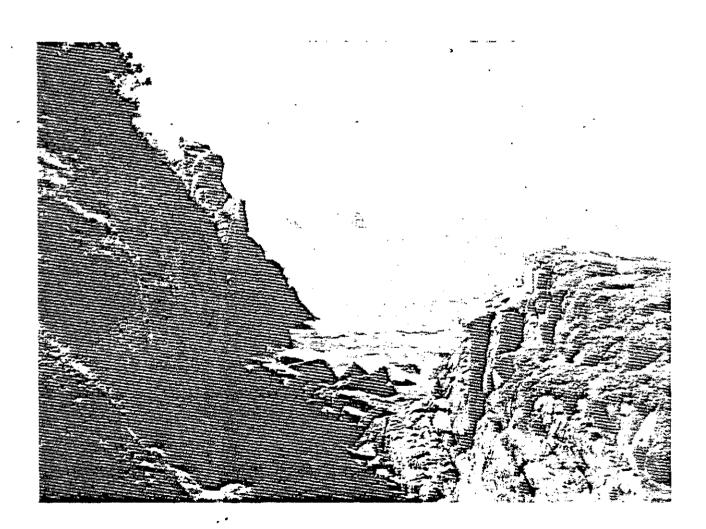
Some Specific Guidelines

The following guidelines are considered essential for the preservation of the natural and esthetic resources of this unit.

- 1. Terrestrial ecosystem management shall include the restoration of the natural fire cycle through a program of prescribed burns. (See discussion on the role of the natural fires, page 36 and Appendix G.) A serious fire hazard does exist now (see Map 9). Special studies will be made, in addition to the collection of data through the monitoring program, to determine a specific program for ecological burning. Our ecologists believe that research will probably substantiate the need for a burning program; however, at this time no definite program has been developed. Before any such program is implemented, the advisory committee and the Director will be fully informed.
- Paleontological sites shall be protected from destruction and investigated for scientific values. Mound and Little Mound meadows are unique ecological resources that shall be protected from human impact and encroachment by -vegetation from surrounding areas.

- 3. The enhancement of the ecological niches of rare, endangered, or endemic species or other entitites shall be attempted when consistent with management toward the pristine state of the ecosystem or when extinction is otherwise imminent. Marine ecosystem management should include the restoration of the natural dynamic balance among sea otter shellfish urchin kelp Indian. The Indian harvesting that occurred in the past must be replaced by management of marine resources, a responsibility of the Fish and Game Commission and Fish and Wildlife Service.
- 4. Exotic species, such as Hottentot fig, kikuyu grass, and pampas grass, shall be controlled and, where possible, eradicated. Biological control and manual removal will be used wherever possible; herbicides will be used only as a last resort and only where environmentally acceptable.
- 5. Rodent populations shall be controlled in public-use areas when found necessary by either public health authorities or the Resource Preservation Division personnel.
- 6. Manmade intrusions that threaten or detract from natural and/or esthetic resources shall be removed and the resources rehabilitated if possible.
 - a) Private vehicular access shall be phased out at an early date and replaced with a shuttle service from the parking lot to Cypress Grove, Whaler's Cove, and Bird Rock terminals. Alternate energy sources, such as methane or electricity, shall be used for shuttle trams if at all possible.
 - b) Total parking facilities shall not exceed 150 cars.
 - c) If, in the future, the monitoring program shows that the resources in the area of the South Shore Road are being degraded by vehicular traffic, the road between the Cypress Grove and South Shore parking lots shall be scarified, leaving only a narrow foot/bicycle trail.
 - d) Roads in the Gibson Creek inland area shall be allowed to revert to narrow trails.
 - e) Road scars shall be revegetated; no new roads or trails other than those specified in the General Plan shall be constructed.
 - f) The department shall request CALTRANS to eliminate parking all along the portion of Highway 1 right-of-way that borders the reserve.
 - g) All trails shall be well-defined yet unobtrusive. Trails down bluffs or hillsides shall be constructed of native rock and/or soil cement. New trails shall not be constructed within the ecological niches of rare and/or endangered taxa nor on archeological sites.
 - h) Trails shall be limited to 1.2 meters (4 feet) in width. Trail barriers shall consist only of natural materials, chain and wood posts, or eye bolt and single-strand wire. Trail barriers shall be used only as a last resort in protecting sensitive resources.

- i) All trails shall be rerouted, where necessary, to minimize human impact on natural ecosystems. For example, the trail between Carmelo Meadow and Coal Chute Point shall be rerouted to avoid areas of high soil compaction and vegetation sensitivity. Portions of the North Shore trail shall be rerouted if excessive human impact or safety factors indicate this action.
- j) Signing shall be kept to the minimum necessary for visitor safety, direction, and interpretation needs, and shall not be permitted in the underwater portion of the reserve.
- k) Trails, parking lots, picnic grounds, and other developments shall be intermittently or permanently closed when irreversible impact to natural resources is deemed imminent.
- 7. Diver use shall be restricted to Bluefish and Whaler's coves. The ten-team diver limit shall be maintained until data from ecological mointoring indicates a change is necessary.
- 8. The buoy in Whaler's Cove shall be replaced by a smaller, less obtrusive buoy.



- 9. The use of septic tank and leach field facilities shall be discontinued and replaced with recycling sewage facilities (a combination solar distillation and methane generation unit with aerobic and anaerobic digestors), or use municipal systems when they become available.
- 10. All utilities shall be placed underground; overhead wires shall be phased out.
- 11. Operational facilities at the existing entrance and near Rat Hill shall be removed from the reserve. (If these facilities are relocated to the extreme southeast corner of the Odello property, it may be necessary to construct a pad in order to place them above the floodplain.)

Cultural Resource Management

All Native American cultural values are extremely sensitive and shall not be disturbed. A program of stabilization shall be undertaken during the construction phase of the General Development Plan to retard the bluff erosion and preserve what remains of these sites. A partial solution to the erosion problem shall be a strictly enforced program against the use of undesignated trails. Trail rerouting to avoid sites shall be undertaken where necessary.

Recreational Resource Management

Recreational facilities shall be developed only on low resource sensitivity areas (areas mapped as high use intensity). Recreational uses shall be consistent with the prime management objectives of the unit, i.e., protection of esthetic and natural resources.

Recreational endeavors shall be consistent with state reserve classification and facilities may be removed and sites restored to a near natural state, if by scientific analysis, irreversible degradation of resources will be imminent due to associated human impact.

Interpretive Management

Esthetic, natural, cultural, and recreational resources shall be interpreted to the public with environmental protection stressed. An area-wide interpretive facility may be maintained outside the reserve boundaries. A visitor orientation facility shall be established at or near the reserve entrance. One facility may serve both functions if located east of Highway 1. Interpretive facilities shall not be intrusive to the natural scene.

During its useful life, the Hudson House may be used to house interpretive displays and scientific collections. Staff may also reside in a portion of the house for the purpose of protecting these collections, etc.

The Whaler's Cottage may be restored to near its original condition and used as a museum for interpretation of the whaling period at Point Lobos. The garage shall be removed if found not to have historical significance, and the cottage itself may eventually be removed if found to be nonrestorable.

Interpretation of pristine conditions, the changes due to human influences, and the implications of these changes shall be stressed.

Carmel River State Beach

Ecosystem Management

Areas of very high ecological sensitivity shall not contain any type of development. Wetlands and riparian woodland ecosystems shall not be intruded upon by developments or unauthorized visitation. Wetlands and riparian areas shall be considered for natural preserve classification. Ecological investigations and ecological monitoring of wetland and riparian ecosystems shall be conducted by the department. Coastal bluff and coastal scrub ecosystems shall be monitored for degradation due to human impact.

Trails and day-use facilities shall be carefully planned in order to prevent ecosystem degradation. Overnight camping facilities shall not be permitted west of Highway 1.

The cultivated portion of the Odello parcel shall remain in agricultural production or be restored to a near natural condition. The opening of the Carmel River Lagoon during flood periods is an unnatural process. The possibility of levee construction south of the Carmel River should be investigated.

Marine ecosystems shall be monitored to detect natural and man-made changes. Marine ecosystem degradation should not be allowed.

Dogs shall not be allowed on Carmel River Beach because of the sensitivity of the Carmel River wetlands ecosystem.

Esthetic Resource Management

The esthetic resources of the unit shall be protected from intrusions into the natural scene. Parking should be eliminated from the west side of Highway 1. Parking facilities north of Carmel River shall not be expanded. Parking or other visitor facilities shall be screened from Highway 1 and major viewpoints within the unit.



Carmel River State Beach

Existing structures on new and planned acquisitions shall be removed if these structures have no historic significance or cannot effectively be used as unit support facilities without damage to scenic or natural values. All utilities shall be placed underground, and overhead wires shall be phased out.

Cultural Resource Management

Archeological sites shall be stabilized by revegetation of disturbed areas with plants native to the particular management unit. Trails shall be routed to avoid disturbing archeological sites. It is currently the policy of the department that no Native American sites shall be disturbed except under conditions of overriding public need as established by the director's office. Any mitigation must be carried out by qualified archeologists with local Native American observers in the field at all times.

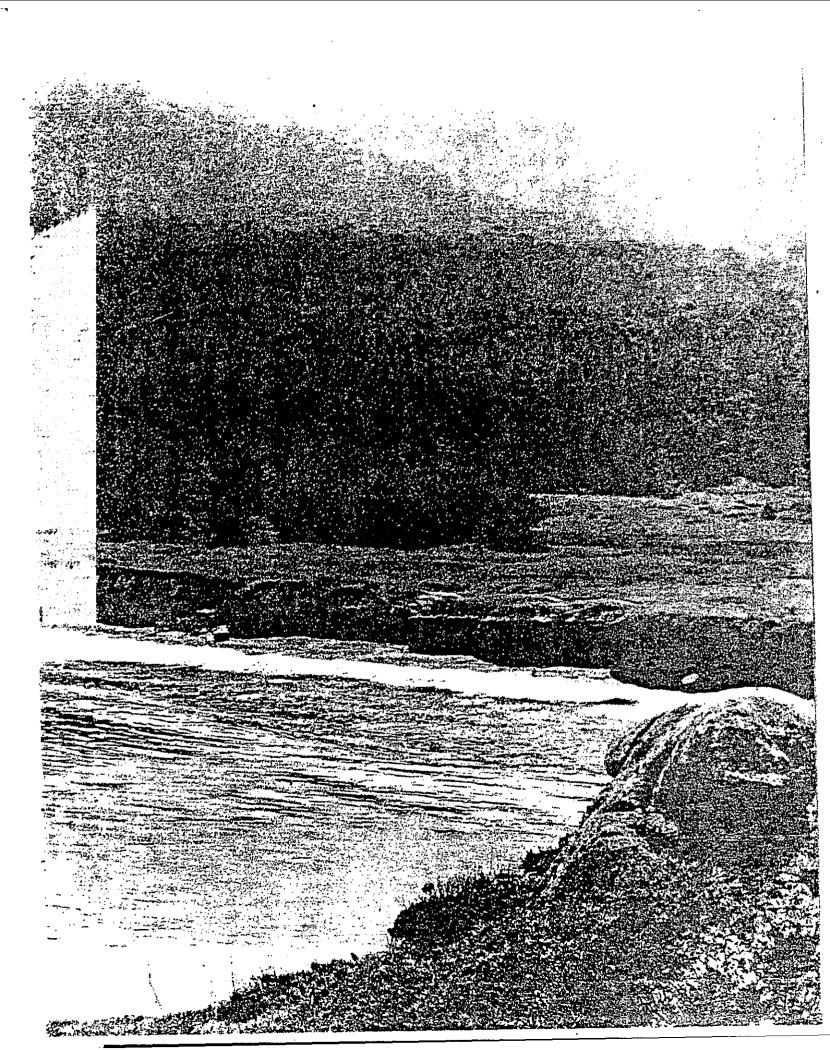
The agricultural use of the Odello Ranch is historic in character and may be continued as an interpretive activity.

Recreational Resource Management

Recreational facilities shall be designed and developed in accordance with allowable use intensities and the sensitivities of other resources in the unit. Recreation facilities shall be developed for beach-oriented recreation, including sunbathing, swimming, jogging, photography, etc. Due to the very high SCUBA diving use and associated mortalities, alternatives to beach access shall be investigated by the department. Studies of alternatives shall include department-operated dive boats; however, no docks or marina facilities shall be allowed within the unit.

Interpretive Management

Esthetic, natural, cultural, and recreational values of the state beach shall be interpreted to the public. The importance of marine, wetland, and riparian ecosystems to man's wellbeing shall be stressed. SCUBA safety shall also be stressed.



LAND USE AND FACILITIES ELEMENT

"Improvements are among the greatest dangers to the values of the Reserve and should never be undertaken until subjected to the closest scrutiny from many points of view."

---Frederick Law Olmsted, Jr.

. LAND USE AND FACILITIES ELEMENT

The Land Use and Facilities Element discusses in detail the department's plan for how the various areas at Point Lobos State Reserve and Carmel River State Beach will be used and what facilities will be provided. It is intended to be a long-range, flexible plan, to serve as a guideline for all proposed development, consistent with the management policies of the Resource Element.

Since the primary purpose of Point Lobos State Reserve is to preserve its rare natural qualities, the plan emphasizes protection of these resources rather than meeting recreational demands. In contrast, recreational opportunities are emphasized at Carmel River State Beach.

The following pages contain proposals for land use, facilities, interpretation, operations, and potential additions. These proposals were developed after an exchange between the planning team and department staff, interested citizens, and various government agencies. The guidelines presented are a result of many persons' efforts. Although every recommendation cannot be reflected in the final plan, it must be stressed that all ideas presented to the department staff were evaluated and helped considerably in the preparation of this plan.

LAND CARRYING CAPACITY

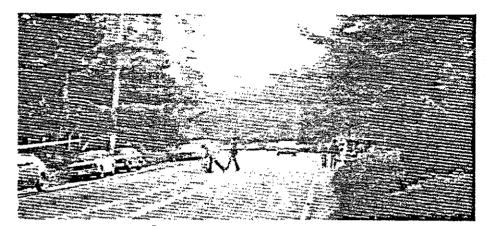
How many people can Point Lobos State Reserve and Carmel River State Beach accommodate without detracting from either the integrity of the resources or the quality of the visitor's experience? This was one of the most complex questions asked in the preparation of the General Plan. An answer can be derived by analyzing four factors: (1) the definition of carrying capacity; (2) current visitor use; (3) the purpose of the units; and (4) the allowable use intensities defined in the Resource Element.

Definition of Carrying Capacity

The concept of carrying capacity has been used by the Department of Parks and Recreation since the adoption in 1957 of Section 5019.5 of the Public Resources Code. The expression "carrying capacity" seems to imply that there is a maximum number of persons that a given unit of land is able to accommodate without detrimental effect. There is then a tendency to make the inference that such a number can be arrived at by a simple compromise between environmental and recreational needs. This is a gross oversimplification of facts and circumstances. The complexities of determining carrying capacities for specific areas will become evident as we discuss the various factors involved.

Although the term "carrying capacity" is not defined in the Public Resources Code, the following definition will be used for this plan:

Carrying capacity is the total number of visitors that can be accommodated at one time within a specified area without detracting from either the integrity of the resources or the quality of the visitor's experience.



Parking along Highway l at Point Lobos on a busy day.

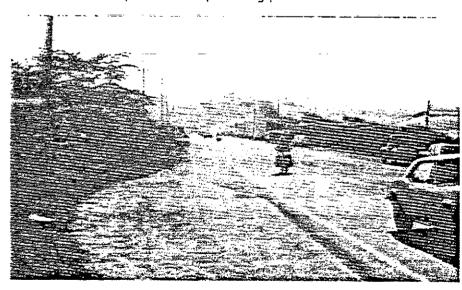
Current Visitor Use I

Ten years ago, about 170,000 people visited Point Lobos annually. In the 1976-77 fiscal year, there were over 300,000 visitors, and many more were turned away. The heaviest visitation occurs between Memorial Day weekend in May and Labor Day weekend in September. The greatest number of turnaways is during the peak travel periods of summer weekends and holidays. Summer weekend crowds often exceed 1,300 people per day, with weekdays averaging about 800 visitors.

Since an entrance station does not exist at Carmel River State Beach, it has been difficult to compile accurate visitation figures. The greatest visitor use, however, at both Carmel River and San Jose Creek beaches often totals over 1,000 people per day on summer weekends. Since no parking lot currently exists for this area, more than 75 vehicles are sometimes parked along Highway 1.

There are basically two types of visitors at Point Lobos. First, there are the casual or chance visitors, people who are usually traveling on Highway I, either heading for another destination or simply sightseeing. The reserve gives these people an opportunity to experience unique scenic views of the ocean and pristine coastline. Usually, these people spend only an hour or two at the unit.

Data for this analysis was derived from visitation figures compiled at the reserve's entrance station and from the results of a questionnaire distributed as part of the planning process.



Congestion at San Jose Creek Beach.

Second, there are those whose destination is the reserve itself. These people come to Point Lobos for many reasons. A great number of them visit to be alone and escape the pressures and technology of urban life: to paint, to photograph, or simply to walk along the peaceful shoreline. Students and scientists also come to study the natural features of the reserve. Bird watchers, whale watchers, and other observers of animal life belong to this group. The ocean and its dramatic influence on the landscape also attract many local residents who visit regularly and spend many hours enjoying the reserve.

As part of the planning process, a questionnaire was distributed at the Point Lobos entrance station and to people on the department's mailing list between February 1 and March 30, 1978. Of the 2,000 leaflets distributed, 370 were returned, yielding a relatively high response of 18 percent. (A summary of questionnaire results may be found in the newsletter that appears in Appendix A.) The following visitor origin figures for Point Lobos were derived from the questionnaire results:

Monterey County	42 percent
Elsewhere in California	44 percent
Out-of-state	14 percent

The questionnaire also revealed that the majority of visitors at the reserve had visited six or more times, with only 17 percent having visited only once. This fact indicates that visitation can be expected to steadily increase as more people become aware of Point Lobos.

The Purpose of the Units

In order to determine a suitable land carrying capacity, we must keep in mind the twofold purpose of Point Lobos State Reserve and Carmel River State Beach. First, and most important, is the long-range preservation of the valuable resources within these units. A secondary goal is to make these resources, within certain limits, available for the public's enjoyment.

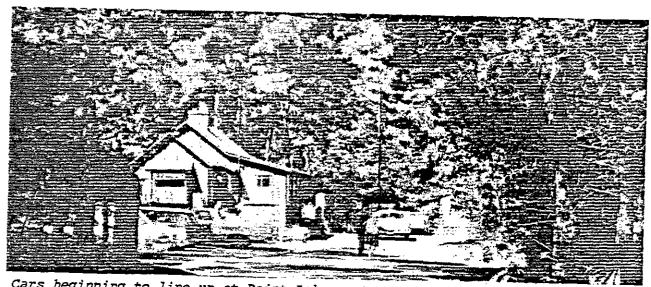
Allowable Use Intensity

The framework for determining a land carrying capacity for Point Lobos State Reserve and Carmel River State Beach was established in the Resources Element. The Allowable Use Intensity Map, page 54, is based on an evaluation of all the natural and cultural resources and describes which uses are allowed for the various areas. It indicates that certain constraints are necessary to limit visitor impact on sensitive areas.

Existing Facility Capacity

There are currently nine parking lots which accommodate a total of about 150 vehicles in the reserve. On nearly every holiday and summer weekend, and frequently during summer weekdays, these parking lots are filled to capacity early in the day. Once this limit is reached, the reserve is closed; cars line up outside the entrance station and are allowed in as a block of space becomes available, usually between 25 to 40 spaces throughout the reserve.

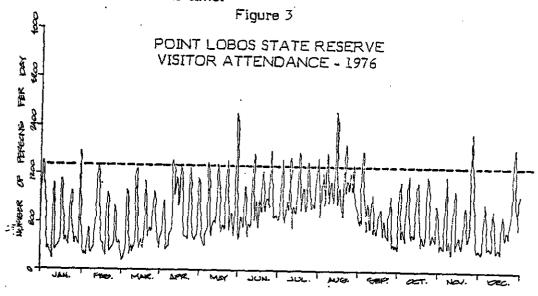
Although the average number of people per car varies from month to month, the average figure is normally about three people per car. This has determined the existing facility capacity of 450 people in the reserve at any one time (150 cars @ 3 people per car). As indicated by the questionnaire, most visitors spend one to three hours at Point Lobos with



Cars beginning to line up at Point Lobos entrance station in the morning

a large percentage (39 percent) staying longer. These figures indicate a visitor turnover factor of about three times per day. The total number of people that can be accommodated with parking spaces per day is about 1,350. Figure 3 indicates that this capacity was exceeded 20 times in 1976, and if the upward trend continues, as it is expected to, this figure will increase.

There are several reasons why the daily capacity of 1,350 people is exceeded so often. Many visitors who are turned away at the entrance station park their cars along Highway 1 and walk into the reserve. A backup of 50 to 75 cars frequently occurs. Other visitors arrive by bicycle, tour bus, and hitchhiking. These additional visitors often exceed the instantaneous carrying capacity by about 200 people for a total of about 650 visitors within the reserve at one time.



LEGEND

----- Existing daily facility capacity (to be retained)

Recommended Carrying Capacity for Point Lobos State Reserve

The determination of a specific carrying capacity necessarily involves a degree of subjective judgment. We want to allow the largest possible number of visitors to enjoy the reserve, but the resources <u>must</u> be protected. Moreover, the numbers of visitors <u>must</u> be limited so that the <u>individual</u> may experience the reserve under optimal conditions. This is, of course, more important at Point Lobos than at most other units of the State Park System. But it is not only the total number of visitors that must be considered; the distribution of persons throughout the reserve should also be taken into account.

As has been noted, the existing facility capacity is 450 persons. It is believed that implementation of several proposals of this plan—the shuttle bus system, visitor orientation area, and allowing public access to the 48 acres north of the existing reserve—will improve the distribution of visitors and general visitor control sufficiently to permit retention of an instantaneous carrying capacity of 450 persons. This recommendation is made with the understanding that protection of the fragile resources here may require that this number be lowered. The resource monitoring program will permit the staff to continually assess the effects of this decision and to make any necessary changes.

To implement this carrying capacity, the following policies are proposed:

- The total number of parking spaces in use at any one time shall be limited to 150.
- 2. A visitor orientation area and a shuttle bus system will be installed as soon as possible. When this shuttle bus is in operation, cars will be allowed to park <u>only</u> in the main parking lot at the visitor orientation facility. (Peripheral parking areas will not be open to the public at any time the bus is operating.) In areas of greatest sensitivity, such as along the south shore, the shuttle bus will serve to control the number of visitors at any one time.
- 3. The staff will make every effort to limit visitation at any one time to 450 persons. Once the instantaneous carrying capacity of 450 persons is reached, no additional visitors will be permitted to enter the reserve. Pedestrians and cyclists awaiting entry can be accommodated at the visitor orientation facility.
- 4. Ongoing resource monitoring will be carried out as discussed in the Resource Element (see page 58) to assess environmental damage and, if necessary, limit visitation. (For example, some trails may have to be closed at certain times of the year to limit resource damage.)
- 5. If these visitor control methods fail to prevent the deterioration of resources or the quality of the visitor experience at Point Lobos, a reservation system, similar to the one currently used at Hearst Castle State Historical Monument, should be implemented.

These policies are proposed as a practical means of improving visitor control to accomplish two things essential to the purpose of the reserve—preservation of the resources and providing the best possible visitor experience. In order to achieve these goals, the department will continue to investigate the feasibility of a flexible carrying capacity that will be responsive to future changes in visitation patterns.

EXISTING LAND USE AND FACILITIES

Regional Land Use

Monterey County was one of the original counties of California. It is historically unique. The presidio was founded in 1770, and during the Spanish and Mexican periods, Monterey became the social and military capital of California. The first constitution of the State of California, under which the state was admitted to the Union, was written in Monterey in 1849. This historic period is now interpreted at the Monterey State Historic Monument, containing the homes of Governor Alvarado and Robert Louis Stevenson and various historic adobes.

Much of the present-day land use of Monterey County is based upon the configuration of the land. Monterey County lies between the Pacific Ocean and the Gabilan Mountain Range. The Coast Ranges, of which Gabilan Range is part, are evident throughout the county, stretching in a northwest-southeast direction.

The Los Padres National Forest, located about ten miles south of Point Lobos, is the largest unit of federal land in the county and is subject to the Forest Service concept of multiple use of the resource. Forest Service campgrounds are scattered all along the Santa Lucia Mountain Range.

Broad, major land uses for Monterey County include recreation, agriculture, urban development (housing and industrial), mining extraction, and transportation.

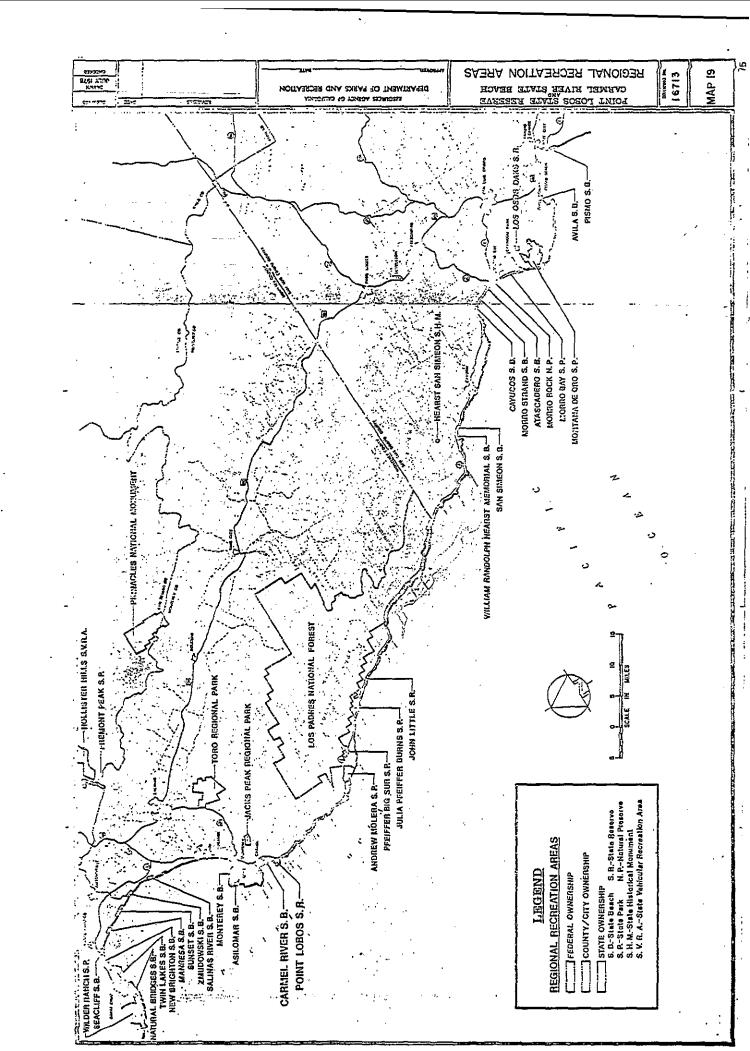
Recreation Uses

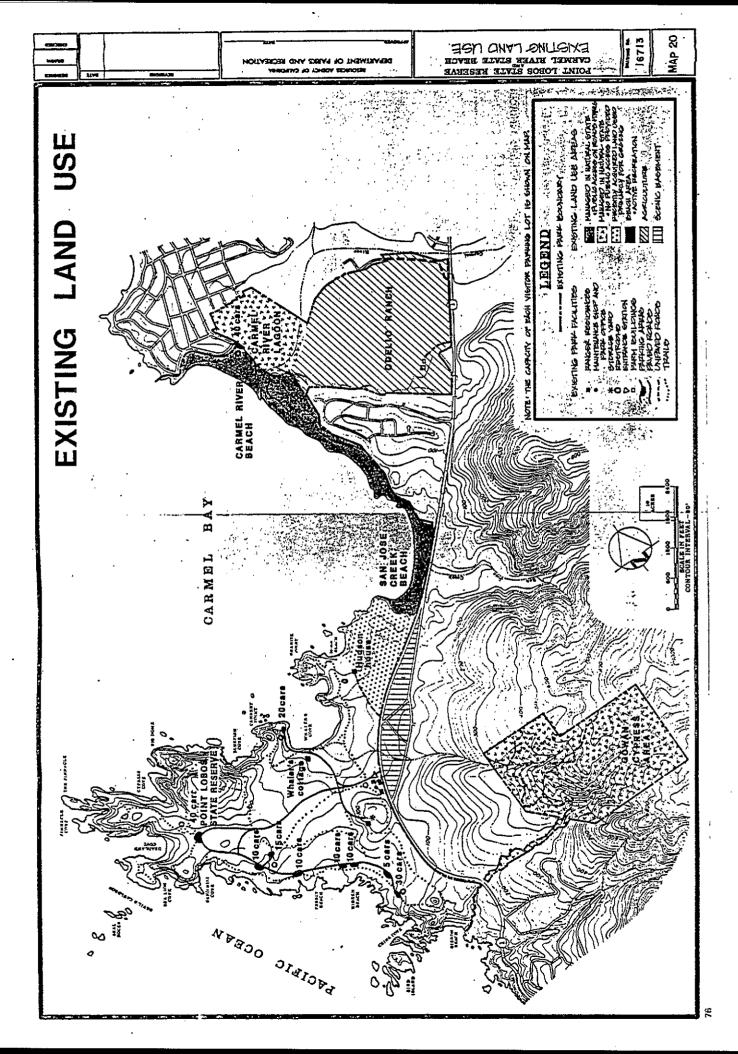
Recreation is broadly represented in the County of Monterey by regional parks, county parks, recreation areas, state parks and beaches, and private organization campgrounds, for a total of 174 parks and recreation areas (see Map 19).

The types of park lands and environmentally-oriented lands that generate recreation are as follows:

- 10 State parks and beaches
- 8 Regional parks
- 6 Major county parks
- 29 Neighborhood parks (play fields)
- 25 Neighborhood parks (landscaped)
- 16 Community parks
- 11 Special activity facilities
- 2 Historic-cultural areas
- 36 Natural environments
- 34 Developed recreation areas
- 6 Outstanding natural areas
- 1 Primitive wilderness area

In recent years the average annual attendance in these recreational areas has been about . four million people.





Urban Development

One of the major land uses in Monterey County that poses a potential threat to the serene atmosphere at Point Lobos is the spreading residential development. Plans for such development have already been proposed for private property east of Highway I near the reserve. Considering the sensitive nature of Point Lobos, these plans must be carefully examined to assess their impact on the entire Monterey area (see Potential Additions, page 98).

Land Use of Project Area

As illustrated on the Existing Land Use Map (Map 20), there are six distinctly different ways in which the property at Point Lobos State Reserve and Carmel River State Beach is managed and used. Table 3 lists these areas and their acreages.

Table 3

Sizes of Land Use Areas

Size

······································	
Managed in Natural State with Public Access	144.1 hectares (356 acres)
Managed in Natural State with No Public Access	
(Point Lobos State Reserve)	60.7 hectares (150 acres)
(Carmel River State Beach)	- 12.1 hectares (30 acres)
Recently Acquired Land Formerly Used for Grazing	19.4 hectares (48 acres)
Beach Recreational Area	30.4 hectares (75 acres)
Agricultural Area	67.2 hectares (155 acres)
Underwater Ecological Reserves	
Point Lobos Ecological Reserve	303.8 hectares (750 acres)
Carmel Bay Ecological Reserve*	619.7 hectares (1,530 acres)

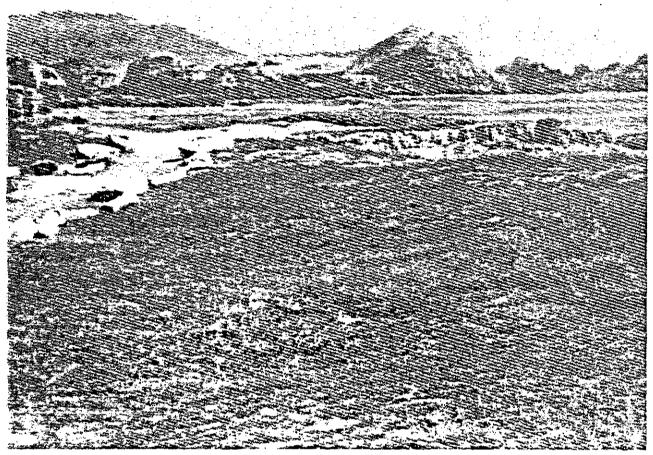
^{*}Administered by Department of Fish and Game

Land Use Area

The following discussion includes a general description of each land use category and the planning concerns associated with it.

Land Managed in a Natural State With Public Access

This classification applies to the original Point Lobos property acquired in 1933. To maintain natural qualities as much as possible in this reserve area, restrictions have been placed on the visitors to limit their impact on the environment. This has also limited the recreational pursuits available to passive types of recreational facilities such as sightseeing, photography, nature study, art, birdwatching, picnicking, and participating in nature walks given by rangers. A few more active recreation pursuits such as hiking, SCUBA diving in the underwater reserve, bicycling, jogging, and wading at China Cove are enjoyed at the reserve.



Heavily used area along South Shore Road

As mentioned in the Resource Element, the primary planning concern relating to this area is the drastic increase in visitation and the damage incurred by the natural resources. The major resource management problems are the changes that have occurred over the last forty years, including the steady spreading of Monterey pines, the vanishing open meadows, the decline in plant diversity, and the increasing fire hazard.

Land Managed in a Natural State With No Public Access

There are two areas which fit into this category—the Gowen Cypress Area and the Carmel River Lagoon. The Gowen Cypress Area, acquired in 1962, lies east of Highway I, and contains two rare stands of the Gowen cypress tree. Although it has about 1.6 kilometers (I mile) of unpaved roads and less than 1.6 kilometers (I mile) of trails, there is currently no public access to this property. A narrow strip of state—owned land along Gibson Creek links this area to the main reserve, but the slopes are too great to allow trail access. An unpaved road leads to the area, but it traverses private property and is not open for public use. The major visitor—use problem here is how to allow limited public access to the Gowen Cypress Area and still protect its fragile resources.

The Carmel River Lagoon provides an outstanding nesting place and habitat for many species of waterfowl. The primary issue here is how best to preserve this valuable wetland resource.

Recently Acquired Land Used Primarily for Grazing

This land, acquired in 1976, covers about 19.4 hectares (48 acres) and is bordered by the main reserve to the south and San Jose Creek Beach to the north. It contains a single structure, the former Hudson House built in 1948, currently used as a staff residence. This property has been used for cattle grazing over the years and offers no public access. Grazing by domestic animals must be discontinued as the Public Resources Code forbids it on State Park System lands.

The major visitor-use issues relating to this land are how the Hudson House should be used and how public access should be provided. The primary management concern is how to handle the plant succession on this land once cattle grazing is eliminated.

Beach Recreational Area

This land use category includes all of the shoreline property along Carmel River State Beach and contains two very popular day-use areas—San Jose Creek Beach and Carmel River Beach. A 40-car parking lot, a restroom facility, 0.5 kilometer (0.3 mile) of unpaved roads, and 1 kilometer (0.6 mile) of trails are located near Carmel River Beach, and there is a restroom at San Jose Creek Beach.

The major planning issue for this area is the severe parking problem that has developed over the years at San Jose Creek Beach. Due to the lack of a visitor parking lot at this beach, cars currently park on the shoulders of Highway 1. This has evolved into an extremely dangerous and visually obtrusive situation. Oftentimes in the summer, particularly on the weekends, over 75 cars park near San Jose Creek Beach.

Agricultural Area

Several years ago the Odello property artichoke field was purchased by the State of California to preserve it from potential residential development. This property, which contains 62.7 hectares (155 acres), is presently leased by a contract administered by the Department of General Services. Although an access road across this property exists for the Carmel Sanitation District Treatment Plant, no public access is provided. Two farm buildings, currently used by the lessee for storage, are also located on the property. The agricultural use is recognized as having historic value.

The major planning issue here is how to restrict visitation in order to retain the agricultural use of this property for many years.

Underwater Ecological Reserves

The Point Lobos Ecological Reserve and the Carmel Bay Ecological Reserve are two of the most important underwater areas in the nation. Their protection and proper interpretation is a prime concern of the department. (See Proposals Regarding Underwater Areas, page 89, for a more detailed discussion.)

Facilities of Project Area

The existing facilities of the two units are listed in table 4.

Table 4

Existing Facilities of Project Area

Point Lobos State Reserve

Parking - 9 lots, 150-car capacity Paved roads - 2.3 miles Unpaved roads - 1.1 miles Trails - 7 miles Restrooms - 5 Staff residences - 6 Unit office Maintenance shop, shed, and storage yard Entrance station

Carmel River State Beach

Parking - 1 lot, 40-car capacity Unpaved roads - 0.3 mile Trails - 0.6 mile Restrooms - 2 Farm buildings - 2

PROPOSED DEVELOPMENT AT POINT LOBOS STATE RESERVE

Visitor Orientation Area

At Point Lobos State Reserve, the increasing number of vehicles parked along Highway 1, the poor line-of-sight for entering and exiting vehicles, and limited backup space at the entrance station have threatened pedestrian safety. Visitor attendance is continuously on the rise, and the unit is often filled to capacity with vehicles. The result is that people park their cars on the shoulders of the highway and walk in. Visitors face danger while crossing the highway to enter Point Lobos. Aside from the safety factor, motor vehicles parked in numbers on a scenic highway are esthetically disturbing. To minimize this problem, to improve visitor control, and to reduce impact caused by vehicles allowed within the reserve, a main visitor parking lot is proposed.

The location of the proposed parking lot was chosen after careful research on the possible impact of such a development. The Point Lobos Advisory Committee was particularly helpful in the site selection process. Seven sites were identified early in the planning process as potential locations for a main parking lot (see Map 21). These sites were selected with the idea that they would also be suitable locations for a visitor orientation facility. In order to consider all possible alternatives, the planning staff investigated four privately owned sites near Point Lobos.

The design criteria used to determine the best visitor orientation and main parking lot site is shown in figure 4. It can be readily seen that two sites rated far above the others when all factors were considered—site #1, near the main entrance and site #2, near the Hudson House.

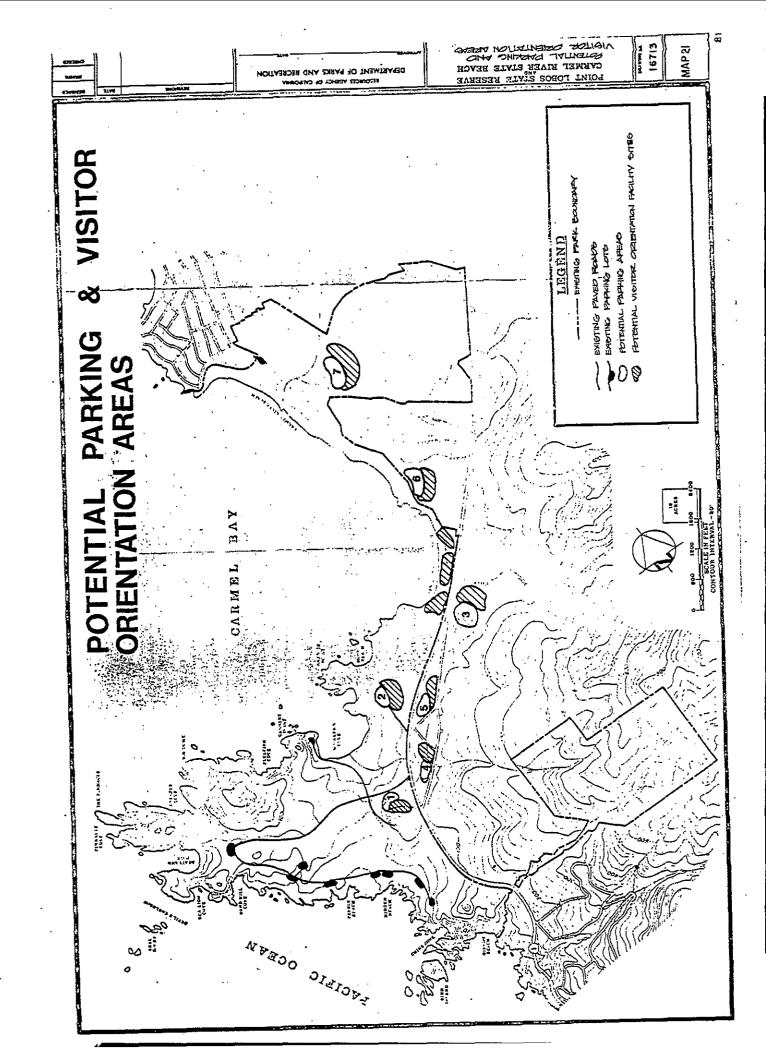


Figure 4

Point Lobos SR and Carmel River SB

Design Criteria for Visitor Orientation Area

Criteria*		Potential Sites**						
,	View of Datables	1	2	3	4	5	6	7
1.	View of Point Lobos	Ц	-				.	L
2.	Space for Future Expansion						2	
3.	Potential for Screening From Highway 1							
4.	Auto Accessibility from Highway 1			■ .				
5.	Shuttle Accessibility to Reserve .		2					
6.	Pedestrian Accessibility to Reserve							
7.	Auto Accessibility to Reserve		2					
8.	Minimum Long-Term (Irreversible) Impact on Natural Resources	2			-		2	

* GOOD: Meets design criteria

AVERAGE: Partially meets design criteria

POOR: Does not meet design criteria

** See Map 21 for location of sites

Site #2, near the Hudson House, was studied in detail to determine its suitability for a visitor orientation area and main parking lot. Although it offers a view of Point Lobos and Carmel Bay, it is located in an area of moderate to high resource sensitivity (see Allowable Use Intensity map, page 54). This site would require a greater modification of natural landforms and development would be more visible from Highway 1 than at site #1.

Other sites were also investigated. Several sites east of the highway on private property had the advantage of being physically removed from Point Lobos and, therefore, would have less direct impact on the reserve's resources. Site #3, on a former polo field near San Jose Creek Beach, was particularly appealing since it is well screened from Highway 1. These sites were eliminated because: (1) they require the acquisition of private property, which could take many years, and a solution to the parking problem at Point Lobos is needed now; (2) they would be totally dependent upon a shuttle bus service to deliver visitors to the reserve, and they would require an undercrossing and separate access road because of the heavy traffic along Highway 1, resulting in further scars to the landscape.

Another idea that was considered when selecting a visitor center and main parking lot site was the concept of a regional visitor center for the coastal lands south of Monterey. This idea was promoted by some local citizens who felt the coastal region between Monterey and Hearst Castle should be recognized as a scenic corridor and should have a regional visitor information center on the northern and southern ends. If this idea were to be pursued further, the potential sites east of the highway, #3, #4, and #5, would be more suitable for this purpose than sites #1 and #2, which are located in the reserve.

Site #1, near the entrance just north of Rat Hill, was chosen for the orientation area because: (1) it is well hidden from the highway and the rest of the reserve; (2) it is in a relatively central location, from which accessibility from the highway and to other areas of the reserve is easy—either by walking, bicycling, or shuttle service; (3) the pine trees near the site are deteriorating and probable destruction of some would not cause a serious loss; (4) according to the resource sensitivity findings listed in the Resource Element, this site is in the moderate to low sensitivity area.

As described in the Land Carrying Capacity section, the main parking lot should accommodate 150 cars. The design criteria listed in figure 4 for the visitor orientation area should serve as guidelines once the project is funded.

A new entrance to the reserve will be located just north of the current entrance, and slightly south of an existing westward-flowing drainage swale. Upon entering the reserve, vehicles will turn left, and will travel south along a frontage road, through a relocated contact station and into the parking lot. Relocating the contact station will provide more backup space, thus reducing the waiting lines on Highway 1. The frontage road will be constructed between the existing residences and the highway. If this is not possible, the road may be routed around the west side of the residences and into the parking lot. The staff residences in this area may ultimately be removed from the reserve.

Although the existing Hudson House is proposed for use as a temporary interpretive facility, a structure better suited for visitor orientation and information should be provided near the main parking area.

This visitor orientation facility should not dominate the landscape, but should encourage visitors to venture out and discover the reserve's wonders for themselves. It should be a simple structure, designed to reflect a close relationship between indoor and outdoor spaces. This facility should be an integral part of the visitor experience, and should be included with any initial developments that provide parking and shuttle.

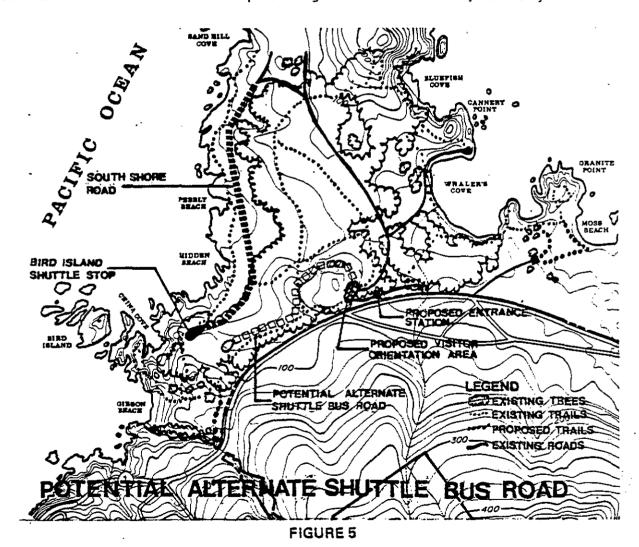
The indoor space should provide interpretive exhibits, displays, models, audio-visual presentations, information and sales desk, administrative offices, storage space, and restrooms. The outdoor space should include a shuttle bus staging area and a gathering space near the main trailheads for quided nature walks.

The visitor orientation facility should also be designed to meet requirements for handicapped persons.

Elimination of Vehicles from Reserve

It has been determined through the years that constant use of motor vehicles has caused environmental impacts on the delicate reserve, especially in the south shore area. Erosion of the coastline is the primary problem here. To reduce the impact of vehicle and pedestrian traffic, it is recommended that six parking lots be removed from the south shore and a shuttle bus system be developed. Visitors would park their vehicles in the main parking lot, and would enter the reserve via a shuttle system, or by foot or bicycle. The shuttle would operate along the main road, to Whaler's Cove, Cypress Point, Bird Island, and back to the parking lot. The main roads would be reduced in width, which would allow use only by shuttle, official vehicles, emergency vehicles, bicycles, and pedestrians.

Six parking lots along the South Shore Road will be removed. Initially, five small lots with a total capacity of 45 cars will be removed and the areas allowed to revegetate. Once a main parking lot is installed and a shuttle system is developed, the Piney Woods lot will be removed and access for picnicking in this area will be by trail only.



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As an integral part of the General Plan, the shuttle should be operated by departmental personnel, not a concessionnaire. It should be designed to serve two basic functions: (1) to enhance the interpretive program at Point Lobos by offering a ranger-guided tour in which the points of interest along the shuttle system route would be discussed; (2) to offer a continuous round-trip service, permitting visitors to embark or disembark at any of the designated stops, without regard to the ranger-guided tour. If, in the future, it is evident that too much damage is occurring on the South Shore Road, even when the shuttle is operating, the South Shore Road should be reduced to trail width, and the following alternative plan should be considered:

A new, narrow shuttle bus road could be provided from the proposed main parking lot around the west and south sides of Rat Hill, to a turnaround at an existing clearing near Gibson Beach and Bird Island. Visitors would have to walk along trails a short distance to reach Bird Island, China Cove, or Gibson Beach.

Auxiliary Interpretive Facilities

Hudson House

Since its original acquisition by the state in 1976, a great deal of public concern has been generated over the future use of the Hudson House. Although it is currently used as a staff residence, it was studied for its potential as a visitor orientation site with a main parking area to be provided nearby. After careful analysis, however, a site just south of the existing entrance was found to be more suitable for this purpose.

The Hudson House is proposed for use as a temporary interpretive and educational facility. A new trail will be developed to link this building with the reserve. Parking will be limited to the existing 10-car unpaved lot for use on a reservation basis only. A portion of the Hudson House should be adapted for a staff residence.

As a temporary trailside interpretive facility, the building should provide exhibits and displays of the reserve's unique natural qualities. The outstanding panoramic view of Carmel Bay from the house should be taken advantage of by emphasizing marine life interpretation. Audio-visual equipment would be useful in interpreting the features of the Point Lobos and Carmel Bay ecological reserves, since most people never directly experience the underwater resources.

The Hudson House will help visitors understand and appreciate the fragility of the reserve and the need for public assistance in its protection. It should be available to school and community groups such as the Point Lobos Advisory Committee and Point Lobos Natural History Association.

Whaler's Cottage

The Whaler's Cottage, currently used as a staff residence, should be converted for use as an auxiliary interpretive facility.

Panels and Signs

Because of the pristine character of the reserve, outlying interpretive panels and signs should be kept to a minimum.

Other Developments

Trails

The 1936 Olmsted Master Plan recommended that visitors to Point Lobos should be allowed to roam freely off the trails. This policy was developed at a time when visitor attendance was relatively low. With over 300,000 visitors arriving per year, the reserve's resources are gradually becoming damaged, and the original trail policy has been changed.

Visitors are now required to remain on all trails within the reserve, with the exception of the shorelines at Sea Lion Point and between Sand Hill Cove and Pebbly Beach. The trails are for pedestrian use only, with no equestrian use permitted. The General Plan proposes to continue these policies and apply them to the recently acquired Hudson property and Gowen Cypress Area, this latter area to be reached by guided tours only.

The location of trails on the General Plan map are approximate only. The exact trail location will be determined by detailed field surveys.

The following measures should be taken to improve existing trails:

- Wherever necessary, trails shall be rerouted to minimize human impact on the environment. This policy shall be applied to the trail between Carmelo Meadow and Coal Chute Point.
- Wherever necessary, trail barriers should be installed to eliminate resource damage along trails. These barriers should consist of unobtrusive materials such as wood posts and chain, or eye bolts and single-stranded wire.
- 3. Trails should be improved, wherever necessary, to reduce erosion. Maintenance procedures could include adding decomposed granite to protect tree roots and to repair erosion, providing soil cement along steep slopes, or installing inconspicuous steps of native rock.
- 4. All existing unpaved roads in the Gowen Cypress Area shall be allowed to revert to narrow trails. A trail will connect Point Lobos to the Gowen Cypress Area for use on a guided tour basis only. Since additional property is necessary to develop such a trail, a land agreement will have to be negotiated with the private property owner. When this trail is provided, every precaution should be taken so that visitors do not indiscriminately cross private property to reach the Gowen Cypress Area.
- 5. Several new trails will be developed in areas which currently do not provide visitor access. They are:
 - a) A new trail will link the Hudson House with the reserve. It will connect with the trail from Carmelo Meadow. Portions of this trail may have to be rerouted to mitigate adverse visitor impact.
 - b) If visitor use along the proposed trail connection to the Hudson House should adversely affect bird life during certain times of the year, an alternate trail should be provided.
- 6. To protect the reserve from uncontrolled entry, a fence may have to be built below the south bluff of San Jose Creek Beach. (Archeological sites on the bluff are currently being destroyed due to human-caused bluff erosion.)

Picnic Facilities

Picnic facilities at Point Lobos are currently located at Whaler's Cove, Piney Woods, near the Bird Island parking lot, and scattered along the South Shore Road. Picnic tables along the south shore (other than those at Piney Woods and near Bird Island) should be removed. Those at Whaler's Cove will remain.

Parking at the Piney Woods picnic area will be eliminated and access will be by trail only. Picnicking should be allowed in these designated areas only.

Restroom Facilities and Sewage

All existing restrooms, located at Whaler's Cove, Cypress Point, Piney Woods, Bird Island, and at the present entrance, should remain. Additional public restroom facilities should be provided at the proposed visitor orientation area and the Hudson House.

Several of the existing restrooms, as well as the staff residences near the reserve's entrance, currently contain septic tank leach fields. Over the years these leach fields have created a harmful effect on the Point Lobos environment and offshore waters. In 1977, the septic tank systems at Whaler's Cove and Piney Woods picnic areas were removed and replaced with recycling toilets with closed sumps requiring periodic pumping out.

It is recommended that the use of all leach fields at Point Lobos State Reserve be discontinued as soon as possible. All sewage generated within the unit shall either be exported or recycled (or removed via municipal sewage system should such become available).

Utilities

As recommended in the Resource Element, all utilities should be placed underground.

Staff Residences and Service Facilities

It is recommended that all but two staff residences and all maintenance buildings be removed from the existing entrance area and from Rat Hill. Two ranger residences should be retained on the reserve for security purposes. The other structures should be moved to another location. The preferred site for their relocation would be on the property known as the former polo field, east of Highway 1. This has also been designated as an alternate location for a parking lot serving San Jose Creek Beach. An alternate site for staff residences and service buildings is the southeast corner of the Odello property, adjacent to Highway 1.

The Whaler's Cottage, currently being used as a staff residence, should be converted for use as an auxiliary interpretive facility. A portion of the Hudson House will house staff who will serve as added protection for this temporary auxiliary interpretive facility.

PROPOSED DEVELOPMENT AT CARMEL RIVER STATE BEACH

Parking Facilities

With increasing numbers of people visiting Carmel River State Beach, a parking problem has resulted. There is only one existing parking lot for about 40 cars at the north end of

the Carmel River Beach. Although this lot is often filled with cars in the summer, it is not proposed to expand this parking facility at the present time. A larger parking lot, which would accommodate additional visitors, could have a harmful effect on the sensitive wildlife habitat of the nearby Carmel River Lagoon.

A serious parking problem currently exists at San Jose Creek Beach. This beach attracts a wide variety of visitors, including SCUBA divers who use the area as an entry to the kelp beds and submarine canyon directly offshore. Available parking is on the west shoulder of Highway 1 only. With typically over 75 cars using this shoulder daily throughout the summer, a serious safety hazard has resulted. The panoramic view of Carmel Bay from Highway 1 is also significantly degraded by the large number of parked cars.

The General Plan identifies two possible solutions to this parking problem. The preferred site for a parking lot is located at the northern portion of San Jose Creek Beach. This location was chosen because it is on the beach side of the highway and, since it is within the park boundary, development of the much needed parking facility need not be delayed. Although this site is partially screened from Highway 1 by a grove of eucalyptus trees, it is not as well hidden as the alternate site. Another disadvantage to this location is the lack of space suitable for development. A 75-car parking lot is proposed at this location. In order to develop a safe intersection with the highway, the details of this proposal should be closely coordinated with the California Department of Transportation (CALTRANS). The proposed parking lot should be designed to have minimum impact on the area and should have screening and berming against visual and noise pollution.

The alternate site for a parking lot is located on private property east of Highway I just across from the central part of San Jose Creek Beach. Situated on level ground that once served as a polo field, this area is extremely well screened from the highway by a dense grove of Monterey cypress. The major drawback of this site, of course, is that it is currently privately owned. Another obstacle is how to provide a method for pedestrians to cross Highway 1. Although there is an existing bridge over San Jose Creek, it is too small to allow adequate public access. In order to avoid damaging the fragile riparian vegetation along this creek, it would be best to cross the highway at a location farther south. The relatively flat terrain of this site would permit a 75 to 100-car parking lot to be developed. This site would be ideal for the relocated staff residences and maintenance buildings from the reserve.

Picnic Facilities

At this time there are no formal picnic facilities at Carmel River State Beach. Informal picnicking, without fires, is allowed on the beach. It is recommended that a few tables be provided at the northern end of San Jose Creek Beach in the eucalyptus woods near the proposed parking lot.

Restroom Facilities and Sewage

There are two existing restroom facilities. One is located at Carmel River Beach near the lagoon, and the other is at the southern end of San Jose Creek Beach. Both these facilities should remain, and additional restrooms should be provided near the proposed parking lot. Restrooms should contain showers for divers and bathers.

It is recommended that the use of all leach fields at Carmel River State Beach be discontinued as soon as possible. All sewage generated within the unit should either be exported or recycled (or removed via municipal sewage system should such become available).

Utilities

All utilities should be placed underground.

Carmel River Lagoon

The relatively well-hidden Carmel River Lagoon, located where the river makes its final turn before emptying into the ocean, provides a wetland habitat for a wide variety of birdlife. It is recommended that the lagoon area be classified as a natural preserve to retain its unusual qualities. According to the Public Resources Code, natural preserves "...consist of distinct areas of outstanding natural or scientific significance established within the boundaries of other State Park System units.... Areas set aside as natural preserves shall be of sufficient size to allow, where possible, the natural dynamics of ecological interaction to continue without interference, and to provide, in all cases, a practicable management unit."

The purpose of designating this area as a natural preserve would be to protect the wildlife and plant life, and their supporting ecosystem. Public enjoyment and education could be provided through ranger or docent-guided tours.

Agricultural Land

The Odello property was originally purchased to prevent potential urban development from encroaching upon the natural qualities and scenic beauty of the Carmel River area. The use of this property as an agricultural field is well justified, considering the statewide need for farmable land and the historical aspects of this use. It is recommended that the property remain in agricultural use as long as possible.

If, at some time in the future, it becomes no longer feasible to farm this land, the property would be managed to return it to a more natural state.

PROPOSALS REGARDING UNDERWATER AREAS

This department has been interested in the unique marine environment of Carmel Bay for a number of years. In 1960, about 304 hectares (750 acres) of offshore land was established as the nation's first underwater reserve. In 1976, another 619.7 hectares (1,530 acres) of underwater land next to Carmel River State Beach was classified as the Carmel Bay Ecological Reserve. These reserves are managed and regulated by distinctively different rules. Both areas are also classified by the State Water Resources Control Board as Areas of Biological Significance.

Point Lobos Ecological Reserve

The underwater land in this reserve was permanently transferred from the State Lands Division to this department in 1960. In order to prevent the area from being disturbed by man, fishing is prohibited, and collecting marine life or natural objects is illegal. Diving access is restricted to the Whaler's Cove parking lot, with a limit of 10 diver teams (20 divers total) at any one time. Due to the rugged coastline and dangerous waters, diving is permitted in Whaler's and Bluefish coves only.

In the past few years, a multitude of suggestions have been made concerning how best to increase public awareness of the reserve's precious values. One of the more interesting proposals is to use portable underwater cameras to transmit an audio-visual picture to a nearby interpretive facility, such as the main visitor orientation facility or Hudson House. It is recommended that this idea be implemented as part of any funding proposal for these interpretive facilities.

Carmel Bay Ecological Reserve

There has been a long history of efforts by this department to expand the Point Lobos Ecological Reserve to include all of Carmel Bay. In 1970, an outstanding report, entitled Underwater Resource Expansion Study, identified a need to protect this additional underwater area from increasing pollution, commercial exploitation, and resource degradation. That same year, Jacques-Yves Cousteau, the famed French underwater explorer, supported this proposal by stating, "The (Point Lobos) ecosystem is...limited in size, and thus very vulnerable. It badly needs protection." (A copy of Cousteau's letter is in Appendix C.)

At their February 11, 1971 meeting, the California State Park and Recreation Commission adopted a resolution, upon the recommendation of its Underwater Board and departmental staff, to establish the large underwater area as proposed in the <u>Underwater Resource Expansion Study</u>. After a long period of public meetings and negotiations with the Department of Fish and Game and State Lands Division, a smaller underwater area, to the 20 fathom line, was established as the Carmel Bay Ecological Reserve to be administered by the Department of Fish and Game.

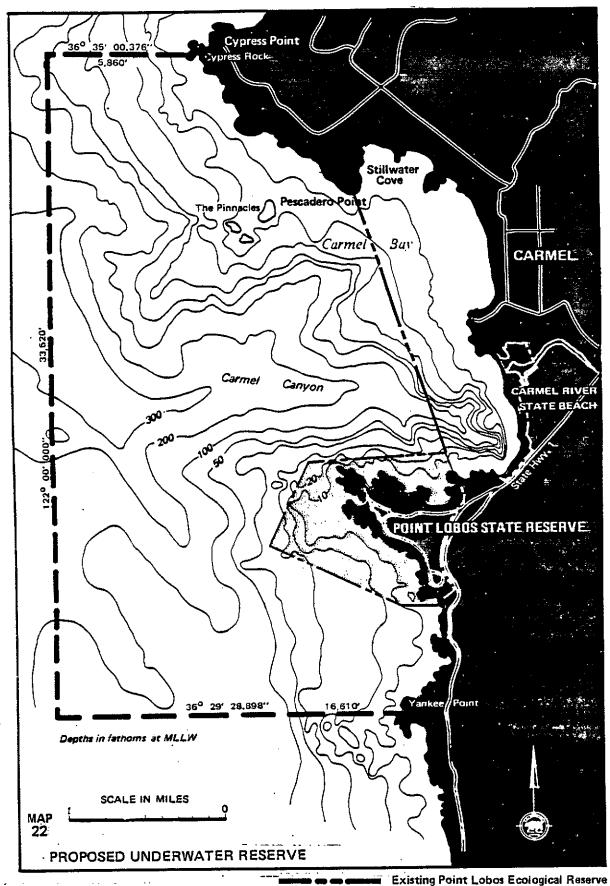
Unlike the Point Lobos Ecological Reserve, this underwater property was not permanently transferred to this department. Instead, the State Lands Commission approved a transfer to the Department of Fish and Game under the jurisdiction of the Fish and Game Commission. As indicated in Appendix D, the regulations on this reserve differ from those of the Point Lobos Ecological Reserve. For instance, fishing is permitted either by boat or from shore and kelp cutting is now allowed.

Recommendation

It is recommended that the department pursue an expansion of the underwater reserve area (see Map 22) to include the 5,698 hectares (22 square miles) originally proposed by the State Park and Recreation Commission for the following reasons:

- 1. A buffer area is needed outside the existing fragile underwater ecosystems of the Point Lobos and Carmel Bay ecological reserves.
- Although most diver use may end at the 20 fathom line, the beauty and significance
 of the Carmel Bay ecosystem does not. The entire bay must be managed as a
 composite whole.
- 3. There is a definite need in this state for large untrammeled, primitive underwater areas as areas of control for scientific observation. These areas provide the only means for determining the relative disturbance of the environment by various water uses. Continued scientific monitoring is the only way to detect deterioration of the ecosystem, and to recommend corrective action.
- 4. Institutions of higher learning that have ongoing study and research programs in the Monterey area, and are knowledgeable of these unique resources, were unanimous in supporting the larger underwater area. In addition, Captain Jacques Yves-Cousteau recommended an even larger area in a letter written to former Park Director William Penn Mott on October 28, 1970.

At the present time, the State Department of Fish and Game does not support this recommendation. In order for this recommendation to be adopted by the State Lands Division, it would have to be thoroughly reviewed by the Department of Fish and Game, as well as by the general public.



Existing Point Lobos Ecological Reserve Existing Carmel Bay Ecological Reserve Previous Proposal Approved by Parks Commission on February 11, 1971

PROGRAM FOR DEVELOPMENT

There is currently no major funding source for either Point Lobos State Reserve or Carmel River State Beach. Implementatin of this plan will require adequate funding.

Although it is not practical to outline a specific sequence of plan implementation at this time, a general discussion of what should be done ideally will serve to summarize the major points of the plan and provide an overview of anticipated developments.

Point Lobos State Reserve

Vehicles and Facilities

Of prime importance in preserving the resources at the reserve is eliminating the excessive numbers of vehicles there, especially along the South Shore Road. To achieve this, a visitor orientation area just north of Rat Hill should be provided; it would include a 150-vehicle parking lot (unpaved), a visitor orientation facility, interpretive panels, restrooms, and a staging area for a shuttle bus. The shuttle bus would transport visitors to and from designated points (Cypress Grove, Piney Woods, Bird Point, and Whaler's Cove) and would operate full-time. Along with the development of the visitor orientation area, the existing entrance would be redesigned to provide more backup space, and a new entrance station and turnaround would be installed.

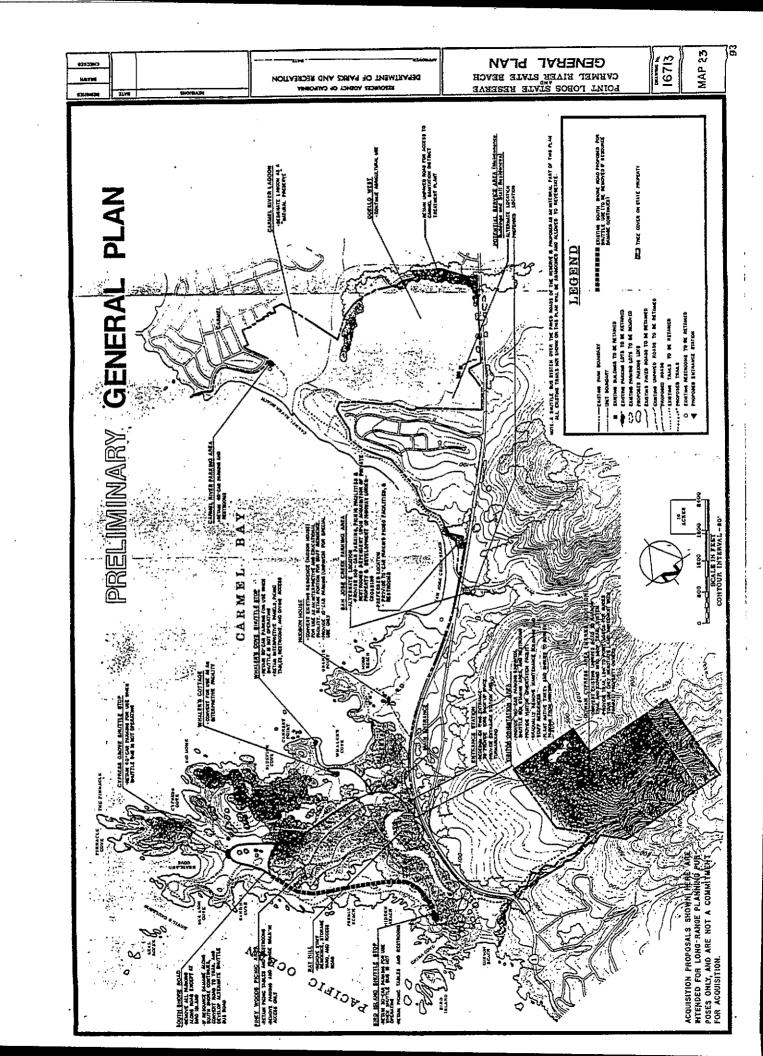
The installation of a shuttle bus system would permit the removal of most of the parking lots along the South Shore Road. (A small number of parking spaces should be retained at Bird Island and Cypress Grove in case the shuttle bus is unable to operate at any time.) These parking areas would be rehabilitated to their natural state and the road itself would be narrowed.

As soon as possible, some of the staff residences and maintenance facilities now located near the proposed visitor orientation area would be moved to a location outside the reserve. (The complex on the west side of Rat Hill has relocation priority.)

Because these developments would require considerable time to accomplish, and because the preservation of fragile resources requires that the department take immediate steps to reduce private vehicle traffic along the south shore, gradual removal of some of the parking areas should be initiated as soon as possible. This could be accomplished administratively. It is recognized that this action would create some problems in accommodating visitor vehicles in the interim, but the protection of the resources, which is the basic purpose of the reserve itself, requires that these measures be taken.

Resource Monitoring

As has been stated, a resource monitoring program is the key to most aspects of resource preservation at this unit. It is believed that such a program could be initiated without a major expenditure; minimal monitoring must be started now, and could be expanded as funding permits. Monitoring would provide data essential for development of specifics for the recommended ecological burning program and would allow the staff to make an ongoing study of the effects of visitation on the resources, making any necessary adjustments to the instantaneous carrying capacity that may be indicated. Specifically, if the monitoring program shows that resource damage along the South Shore Road is



continuing in spite of the steps taken to mitigate it, the South Shore Road would be scarified and converted to a trail. In that event, a shuttle bus road from the main parking lot to a new turnaround at a clearing near Highway 1 (for access to Bird Island) would be considered.

Other Developments

Many of the proposals advanced in this plan could be carried out using existing operations funding, or under a minor capital outlay program. These aspects of the development are listed below. (No priorities are implied by the order of presentation.)

- * Convert existing residence (Hudson House) for use as a temporary trailside interpretive and educational facility. Retain a portion as staff residence.
- * Gradually remove picnic tables along South Shore Road. Retain picnic tables at Whaler's Cove, Bird Island, and Piney Woods.
- * Rehabilitate existing trails wherever necessary. Provide new trails to link with existing trail system.
 - * Initiate environmental education and docent programs at interpretive facility and key locations in the reserve.
 - * Remove all existing septic tank systems in the reserve and replace with pump-out or recycling facilities (or use municipal system when/if it becomes available).
 - * Convert Whaler's Cottage for use as an interpretive facility.
 - * Provide trail link from Point Lobos to Gowen Cypress Area for guided tour use only. Negotiate land agreements with private property owner.

Carmel River State Beach

The major development at Carmel River State Beach includes provision of a 75-vehicle parking lot, picnic facilities, and restrooms at San Jose Creek Beach. At the same time steps should be taken to designate Carmel River Lagoon a natural preserve, and to limit access to the lagoon to guided tours.

The feasibility of relocating Point Lobos maintenance buildings and staff residences to Carmel River State Beach should be investigated and the best sites for such relocations identified.

CONFORMANCE OF PLAN TO 1976 COASTAL ACT

California Coastal Act of 1976

The fundamental purpose of the 1976 Coastal Act is to implement the controls on California coastal development imposed by Proposition 20, the coastal initiative enacted in November 1972. This initiative resulted in the preparation of the California Coastal Plan, submitted to the legislature in the fall of 1975, and the establishment of controls on development. These controls expired December 31, 1976, and the 1976 Coastal Act took effect on January 1, 1977.

Over the next three years, local governments along the coast, including 15 counties and 54 cities, will be developing local coastal programs in cooperation with their regional coastal commission. These programs, due for state certification by 1981, will implement the provisions of the Coastal Act through land use and zoning regulations. Monterey County is presently coordinating its local coastal program with the Central Coast Regional Commission in Santa Cruz.

Conformance to Coastal Act

This General Plan is intended to conform in all respects to the California Coastal Act of 1976. The following aspects of this plan comply with the policies from Chapter 3 of the Act.

1. Public Access

The Coastal Act requires new development to provide public access to the shoreline, except where it is inconsistent with the protection of fragile resources, where adequate access exists nearby, or where agriculture would be adversely affected. A major concept of the General Plan is to enhance the visitor's experience at Point Lobos State Reserve and Carmel Bay State Beach by reducing automobile traffic and encouraging travel on foot.

Although the elimination of several parking lots along the South Shore Road will reduce direct shoreline access by car, the method of public access at Point Lobos will be improved by the development of a shuttle bus system.

In order to reduce the impact of visitation on the reserve's natural environment, however, the plan identifies the need for limits on visitor attendance. This visitor control will be accomplished by the development of a main parking area and, if necessary, a reservation system.

Public access at Carmel River State Beach will be enhanced by providing a 75-car parking lot and trail link to Point Lobos.

2. Recreation

Article 3 of the Coastal Act requires "coastal areas suitable for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses." Within the limits set by the coast's fragile natural resources, the General Plan offers opportunities for a variety of recreational uses. In addition to retaining Point Lobos activities such as sightseeing, hiking, photography, picnicking, guided tours, and SCUBA diving, visitors will be provided with an improved interpretive and educational program at the visitor orientation area and Hudson House interpretive facility.

3. Marine Environment

According to Article 4 of the Coastal Act, "Marine resources shall be maintained, enhanced, and, where feasible, restored." There are three ways in which an attempt is being made to preserve the marine environment of Point Lobos State Reserve and Carmel River State Beach in a natural condition: (1) a 314-hectare (775-acre) water area offshore from Point Lobos has been designated an ecological reserve where all plant and animal life is totally protected; (2) the submarine lands adjacent to Carmel River State Beach are in the Carmel Bay Area of Special Biological Significance in which marine life is protected by the Department of Fish and Game; (3) this plan proposes establishing the Carmel Lagoon as a natural preserve in order to protect its fragile wetland plant and animal species.

4. Land Resources

Article 5 of the Coastal Act requires environmentally sensitive areas to be protected from visitor use and park development. In siting the various facilities proposed in the General Plan, particularly the Point Lobos visitor orientation area with its main parking lot, the utmost care was taken to avoid environmentally sensitive resources. The Resource Element of this document explains the systematic resource evaluation that was used in categorizing all lands in the study area on a scale varying from extreme ecological sensitivity to very low ecological sensitivity.

Article 5 also refers to the retention of as much coastal agricultural land as possible to assure the protection of the area's agricultural economy. The General Plan conforms to this policy by proposing the continuance of farming at the state-owned Odello property for as long as this use is economically feasible.

5. Development

According to Article 6, new development should: (1) be located near existing development to preserve open space; (2) be sited to protect coastal views and minimize the alteration of the natural landscape; (3) maintain and enhance public access; (4) provide nonautomobile circulation within the property; (5) provide parking facilities that could be served by public transit; and (6) minimize energy consumption and vehicle miles travelled. Although some modification of existing terrain will be necessary in providing park facilities such as parking, picnic areas, and trails, new development is located as close as possible to Highway 1 to retain the greatest amount of coastal property in a natural state. This development is also sited to allow the planting of native trees and shrubs for screening facilities from the highway.

The General Plan also strives to minimize energy consumption and vehicle miles travelled by limiting parking spaces, encouraging visitors to arrive by public transit, and changing the car-oriented circulation system at the reserve to a shuttle bus system. For further details on the environmental effects and proposed mitigation measures of this plan, refer to the Environmental Impact Element.

The "Reversible Development" Concept

The California Coastal Commission advocates a long-range planning approach that is particularly applicable to Point Lobos—the "reversible development" concept. This concept minimizes the long-term adverse effects of a new development on the environment. By properly designing new facilities so that there is little alteration of the natural landscape, it would be possible to return the area to its near original state should the need arise at some future date to remove or relocate the facilities. Without a "reversible" design, the site could be scarred forever.

The "reversible development" idea is referred to in Article 6 of the Coastal Act of 1976 which requires that new development be sited to "minimize the alteration of natural landforms."

This General Plan is consistent with the "reversible development" concept in several ways. The proposed main parking area at Point Lobos will be unpaved to blend with the natural setting and minimize long-term damage to the reserve. Due to the lateral movement at the soil/bedrock interface caused by leach fields, septic tanks are not recommended for new development, thereby reducing any long-term environmental damage caused by restrooms or other park buildings.

POTENTIAL ADDITIONS

The following discussion and all previous comments regarding land acquisition are intended for long-range planning purposes only, and are not commitments for acquisition. Before any area could be proposed for acquisition, it would need to be studied in greater detail to establish specific boundary lines. It should be recognized that development by owners could take place that would render these lands unsuitable for state park purposes. In such instances, these planning statements would have to be reevaluated.

Priority 1:

Development of a 75-car parking lot is proposed at the north end of San Jose Creek Beach to solve the serious parking problem in this area. If such development proves infeasible for any reason, or if expanded parking facilities are needed, the best alternate location would be the abandoned polo field just east of Highway 1, across from the beach. This area is exteremely well screened from the highway by an existing grove of Monterey cypress. It could easily accommodate 100 cars and would also be an ideal site for the staff residences and maintenance buildings that are to be moved from the reserve. One drawback in the polo field site, however, would be the additional expense of developing a pedestrain crossing under the highway.

Priority 2:

It would be desirable to acquire additional land to serve as a buffer to the relatively small Gowen Cypress Area. This rare plant species is extremely susceptible to the potential threat of development in the area. Additional property would also provide more opportunities for trail access from the reserve.

Priority 3:

A large area immediately east of Point Lobos, including the Gibson Creek watershed, contains beautiful Monterey pine forests, redwood canyons, and magnificent vista points. Portions of this area were investigated for potential use as a visitor center and main parking area site, but were found to be unsuitable for this purpose for several reasons. This relatively pristine land could be used for various day-use activities such as hiking, picnicking, horseback riding, nature study, and photography.

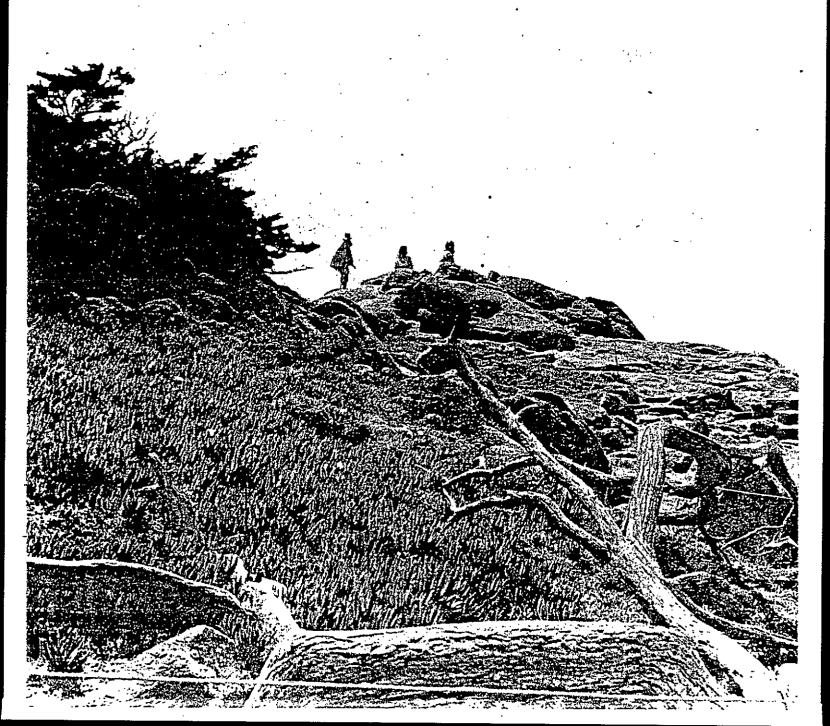
Priority 4:

Northeast of San Jose Creek Beach lie open, hilly grasslands with some Monterey pine on the upper slopes which are used for cattle grazing. In addition to the potential this property offers for certain day-use recreational activities, this land could also be used to provide limited camping facilities. There is a real need for camping facilities in the Monterey area, and this property is much more suitable than other land in the area for such development.

Proposal for Trail Corridor

The Ventana Wilderness Area in the Los Padres National Forest is located about 20 miles south of Point Lobos. A trail corridor should be provided to link this scenic wilderness area with the reserve. In order to determine the exact location of such a trail, negotiations will have to take place among this department, the National Forest Service, other public agencies, and certain private landowners.

OPERATIONS ELEMENT



OPERATIONS ELEMENT

"The essence (of the reserve policy) is to interfere as little as possible with the natural processes."

-- Joseph H. Engbeck, Jr.

OPERATIONS ELEMENT

The previous chapters of this document have built the framework for the future management and development of Point Lobos State Reserve and Carmel River State Beach. It is the actual method of park operation, however, that often leaves the longest lasting impression on the visitor.

The purpose of this chapter is to describe the general guidelines by which these units will be operated. Most of the following information is discussed in greater detail in the reserve's Area Operation Plan, on file at the Point Lobos office.

The phased development proposals in this General Plan are designed to place the greatest emphasis on the preservation of the natural scene at Point Lobos State Reserve and Carmel River State Beach. The specific operational program to be prepared for each development phase should at all times place the highest priority on that purpose. This philosophy is reflected in the following guidelines.

VISITOR CONTROL

The steady increase in visitation at Point Lobos has resulted in a serious visitor control problem. As indicated in the Land Carrying Capacity section, page 53, the present method of limiting attendance is to forbid the entrance of vehicles once all parking spaces within the reserve are filled. The General Plan proposes to improve the patterns of visitation by (1) providing a main parking lot and limiting total parking spaces to 150 cars; (2) introducing a shuttle bus system; (3) providing a visitor orientation facility to make visitors more aware of resource sensitivities; (4) implementing a resource monitoring program; and (5) using a reservation system, if necessary. The success of these last three constraints largely depends upon the manner in which they are implemented by field personnel.

The field personnel frequently encounter a number of visitor control problems that cannot be directly solved by the proposed development in the General Plan. Some of these are:

- 1. School groups, usually about 60 to 90 students from a single school, are descending upon the reserve with increasing frequency.
- 2. Enforcement problems are multiplied at certain times by an influx of visitors to the Monterey area by such events as the Laguna Seca races, jazz festival, etc.
- 3. The overcrowding of day-use facilities, particularly at Carmel River State Beach, occasionally requires law enforcement. Thefts from parked cars are common. The California Highway Patrol, Monterey County Sheriff's Office, and Carmel Police Department are also involved in law enforcement.
- 4. Due to the lack of personnel, Carmel River State Beach is patrolled only incidentally for general clean-up or in response to complaints reported by visitors or neighborhood residents. Frequently, the reported violators are gone before department personnel arrive at the scene.

To improve the present method of visitor control and to operate future development properly, there will need to be an increase in permanent and seasonal personnel commensurate with increases in facilities.

INTERPRETATION

Interpretive Themes - Point Lobos State Reserve

The following information concerning interpretation is from the June 1977 Interpretive Prospectus and several previous interpretive studies. These reports are on file at the Point Lobos unit office and the department's headquarters in Sacramento. The interpretive themes are broad categories that describe the most significant aspects of Point Lobos' history. They are currently used by rangers as guidelines for interpretive talks and should serve to guide the development of future interpretive facilities.

One of the most important concepts of this plan is to improve the current methods of interpretation at Point Lobos. An orientation facility should be provided near the main parking lot to orient visitors and educate them about the fragility of the reserve's resources and how easily these resources can be damaged. As an auxiliary interpretive facility, the Hudson House will also be used to improve the existing method of interpretation.

Primary Theme

The Dramatic Interaction of the Land and Water: The effects of the sea on the geological formation, on the climate, and on the biota of the reserve is the single most significant theme of Point Lobos. The ongoing assault of the ocean on the land can be clearly seen in Point Lobos State Reserve's landscape and biota. In fact, Francis McComas, renowned painter, was so moved by this dynamic interaction that he referred to this unit as "the greatest meeting of land and water in the world."

Secondary Themes

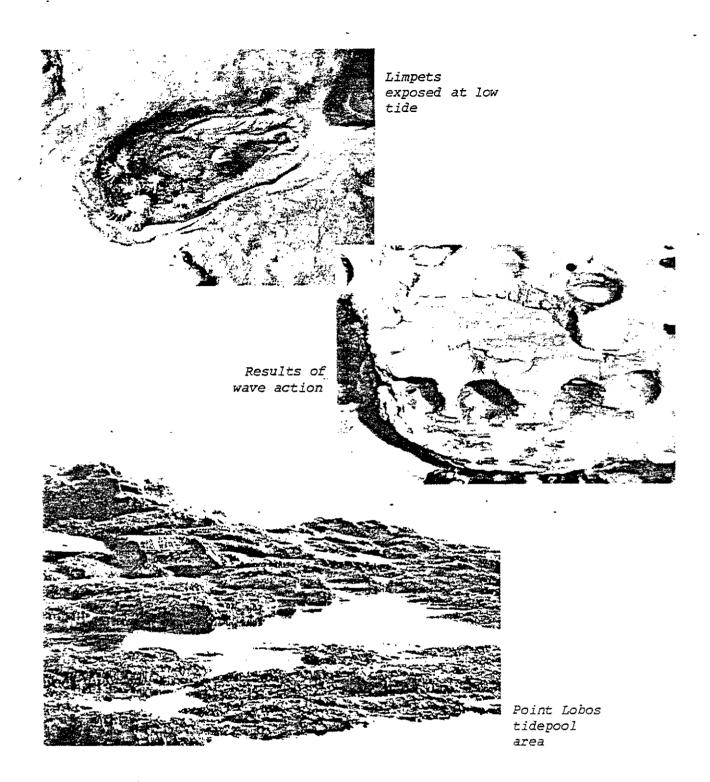
- The Monterey Cypress (Cupressus macrocarpa): Point Lobos and Cypress Point, two rocky headlands of the reserve, are the last foothold for the Monterey cypress, a Pleistocene relic. The life story of their battle with the ocean storms and wind has been recorded in the trees by the contorted shapes they have assumed. This magnificent tree was the prime reason for the reserve becoming a unit of the State Park System.
- 2. <u>Marine Mammals:</u> Visitors are thrilled to observe the sea lions, seals, sea otters, and the gray whales during their migration. Some people come just to see these fascinating animals. The life stories, as well as human impact on these animals during the past, present, and future, should be interpreted to the visitors.



Sea otter



"The Old Veteran" (Photo from Point Lobos, Interpretation of a Primitive Landscape)



3. Intertidal and Subtidal Life: The Point Lobos Underwater Ecological Reserve is a completely different world than the terrestrial domain. What type of life exists beneath the ocean surface? Although SCUBA divers frequently use the underwater ecological reserve, this is a question most visitors are never able to answer through direct experience. Intertidal life can be observed by visitors only a few times a year, during low tides. Through proper interpretation of the intertidal and subtidal life, visitors can vicariously experience what exists beneath the ocean waters.

- 4. <u>Cultural History:</u> Point Lobos State Reserve has had an interesting and colorful past, from being the home of Costanoan Indians through exploitation of the resources and finally, to acquisition by the state. Since the whaling and fishing industries were the largest developments at Point Lobos State Reserve and directly relate to the primary theme of the land/sea interaction, emphasis should be placed on their story.
- Resource Preservation and Management: It is necessary for visitors to realize how fragile the unit's natural and cultural values are, how they have been damaged in the past, and how we still can easily damage these resources today. The rules and regulations for Point Lobos State Reserve are usually broken through ignorance, rather than malice. Proper interpretation can help the public appreciate the value of the resources, and in turn, can lead to resource protection. Thoughtful use of the resources by visitors should be encouraged, and the idea that Point Lobos State Reserve is a special state park system unit that needs special care should be reinforced.

The importance of decreasing fire hazard and returning fire as a natural part of the ecosystem must be explained to the public so they will understand the reasons for introducing certain management practices.

Currently, the primary method of interpretation at Point Lobos consists of a brochure distributed at the entrance station, public contact by rangers on patrol, ranger-led interpretive walks, and some field interpretive facilities (signs, panels, etc.) which are kept to a minimum to avoid intrusions on the natural scene.

Both of these interpretive facilities should be used to expand the present interpretive program, which is primarily land based, to one including a description of the marine environment. Although intertidal tours are given in the summer, the visitor orientation facility and Hudson House could present a more complete story of the underwater world through a variety of displays. Portable underwater cameras and audio-visual equipment could be used to portray the inseparable relationship between the terrestrial and marine environments. This technique would benefit the majority of visitors who are not SCUBA divers and cannot directly experience the undersea world for themselves.

Some of the other ideas that should be implemented to improve the existing interpretive program are:

- 1. To provide elderly and disabled visitors with means to directly experience the Point Lobos natural environment. Their needs should be considered in the design of a shuttle system. A short, self-guided interpretive trail very near the visitor center could be provided which would be accessible and meaningful to all visitors, including those with various disabilities. Blind, deaf, and meantally retarded persons should be considered in the development of interpretive programs.
- To provide interpretive materials in other languages for non-English speaking visitors, since Point Lobos attracts many people from foreign countries.
- To provide an expanded program of ranger or docent-guided tours. The Point Lobos Natural History Association has the talent to greatly benefit the reserve's program of interpretive walks.

- 4. To provide demonstrations and workshops that can be incorporated into the education program.
- 5. To provide a ranger/driver on the shuttle to interpret features at different points and at trailheads.

Interpretive Themes - Carmel River State Beach

Primary Themes

- 1. The Formation and Dynamics of Waves and Beaches: The everchanging relationship between the sea and the shore offers a firsthand opportunity to interpret how waves and beaches are formed and their various characteristics.
- 2. Carmel River Lagoon and Marsh Area: How was the marsh formed? What is its significance as a transition zone between the marine and freshwater ecosystems, a sanctuary for a variety of waterfowl, and a spawning and nursery area for a variety of marine fishes? These are only a few of the questions that can be answered through interpretation. From these questions, the nature of the marsh and the food chains that support its animal life can also be explored.
- 3. Shore Birds: Shore birds are found along the beaches of the unit and are easy to observe. Their life histories can be explored and interpreted.
- 4. Beach and Shoreline Recreation: Information about such activities as shell hunting, photography, and so forth can be made available.

Secondary Themes

- 1. <u>SCUBA Diving and Fishing</u>: Dangers of these activities and safety precautions should be explained and demonstrated. These can be related to the primary theme of wave dynamics. The types of fish found here and their life cycles can be told in relation to good fishing practices.
- 2. <u>Cultural History:</u> The Costanoan Indians' use of the beach, the mission establishment, and Gaspar de Portola's land exploration of California, can be interpreted.

RESOURCE PROTECTION

Although it is the policy at Point Lobos to interfere as little as possible with the natural resources, there are some measures that need to be taken to preserve the natural setting and to visitor safety. Curently, resource protection at Point Lobos State Reserve and Carmel River State Beach consists primarily of routine ranger patrols and of controlling erosion and noxious plants. The Resource Element describes proposed policies for future resource management.

Erosion occurs mostly along the south shore where visitor density is very great and trails, suffer from overuse. Erosion occurs mostly where trails are poorly defined. With the exception of the shorelines at Sea Lion Point and between Sand Hill Cove and Pebbly

Beach, visitors are required to stay on all trails. The most effective method of controlling erosion has been to install trail barriers consisting of eye bolts and wire strands.

Carmel River Outlet Control

At Carmel River State Beach summer tides build a high, continuous beach which dams the outlet of the Carmel River, forming the Carmel River Lagoon. Since 1959, the responsibility for opening the outlet has been entrusted to the Department of Parks and Recreation in cooperation with the Carmel Sanitation District and Monterey County.

Premature opening of the outlet could be as disastrous as failure to open soon enough since, if the flood crest failed to arrive before the outlet was closed by the next high tide, it might well create havor before the outlet could be reopened. Factors which must be taken into account include: degree of soil saturation on the watershed; amount of spill over Los Padres and San Clemente dams; river level and rate of flow; storage capacity of the lagoon at that time; whether or not it is raining, and if so, how hard; state of the tide; height of surf; wind direction and velocity; unforseeable factors.

Noxious Plant Control

Point Lobos, including the Gowen Cypress Area, has been invaded by pampas grass, star thistle, wild dill, poison hemlock, and genista; all of which are nonindigenous, noxious plants. Over the years practically all of the wild dill, and perhaps 75 percent of the pampas grass, has been eliminated. Because of the harmful side effects of herbicides, the nonnative plants are removed manually by "grubbing out" or by means of biological controls. Although these methods are far more time consuming, they are much less damaging to the environment.

Due to the workload demands of increasing visitation, park personnel have been able to spend little or no time on the eradication of noxious plants. Additional staff is needed now to pursue this very important aspect of resource protection.

Fire Control

In addition to the underground water supply system, which contains several fire hydrants at key locations in Point Lobos, there is firefighting equipment available at the reserve's maintenance shop. The California Division of Forestry is also located less than fifteen minutes away at the Carmel Hill Station. The Carmel Highlands Fire Department is within ten minutes.

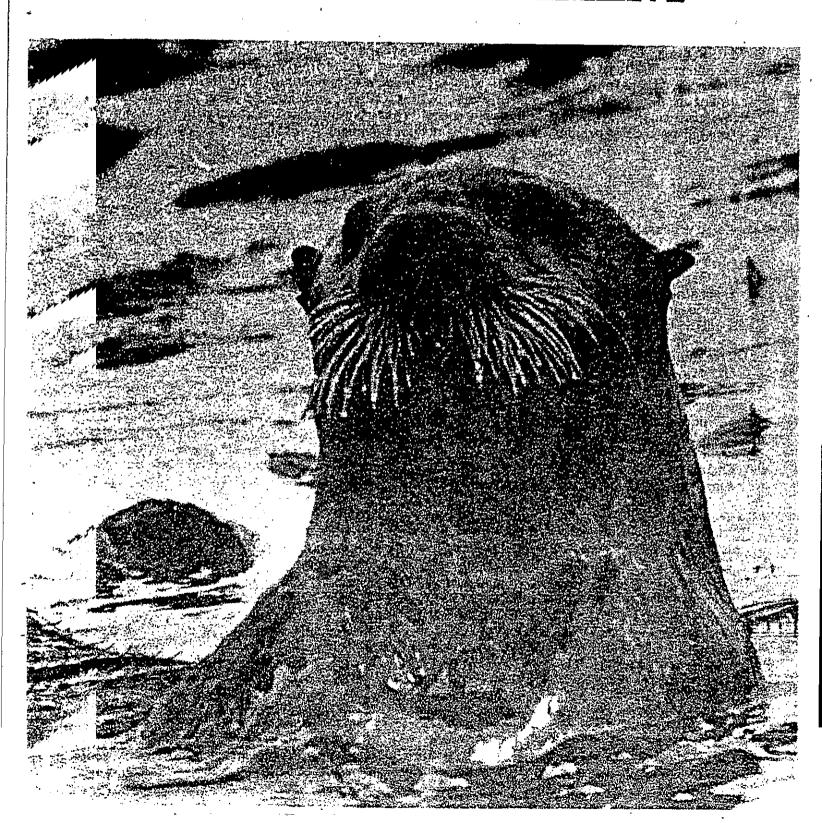
RECOMMENDATIONS FOR FURTHER STUDY

The following investigations are necessary to completely implement the General Plan's management policies and proposed developments. Some of these studies have been previously recommended by department personnel and others are referred to in other sections of the General Plan.

* Interpretive and scientific collections, composed of geologic, paleontologic, pedologic, botanic, and zoologic specimens and archeological artifacts should be compiled and housed in the proposed visitor orientation facility.

- * A library including pertinent references relating to Point Lobos State Reserve and Carmel River State Beach should be established and located in the same visitor orientation facility.
- * The carrying capacities for the fragile environmental areas should be periodically monitored, including the cypress groves, the riparian woodland and forest, the Carmel River marsh, and the underwater reserve.
- * Negotiations with the State Lands Division and Department of Fish and Game should be pursued to expand the underwater reserve.
- * A more thorough inventory of the underwater flora and fauna should be taken, particularly at the south shore of the reserve.
- * Research should continue on the ecology and origins of the Monterey and Gowen cypresses.
- * Research should continue on the ecology and origins of the Mound meadows.
- * Further studies on the plant succession of the different plant communities at Point Lobos should be undertaken.
- * Research is needed on ecosystem dynamics.
- * The general blota of the marsh and riparian zones of Carmel River State Beach should be surveyed and the importance of these habitats documented.
- * The insect and fungi (mushroom) populations of Point Lobos State Reserve and Carmel River State Beach should be surveyed.
- * In order to convert the Whaler's Cottage to an interpretive facility, information about its construction date and original use should be obtained.
- * The feasibility of alternative energy sources for existing and proposed facilities should be investigated.
- * Improved methods of providing for handicapped people in the reserve and beach areas should be developed.
- * Ecological requirements for rare and/or endangered taxa should be investigated.

ENVIRONMENTAL IMPACT ELEMENT



ENVIRONMENTAL IMPACT ELEMENT

The Environmental Impact Element (EIE) of this General Plan should be regarded as a Final Environmental Impact Report, presented in compliance with the California Environmental Quality Act requirement.

It is divided into three major sections: (1) Description of Project; (2) Description of Environmental Setting; and (3) Environmental Impact. The latter two chapters are not in detail, due to the general, broad nature of the project description. The General Development Plan for Point Lobos State Reserve and Carmel River State Beach is broad in scope; therefore, the EIE is also a broad assessment of the potential impacts. Whenever a specific phase of the overall plan is budgeted and proposed for implementation, a more detailed and specific environmental assessment will be prepared for that particular project, as part of the budget package.

DESCRIPTION OF PROJECT

Point Lobos State Reserve is located 4 miles south of Carmel on the rugged Monterey County coastline. Carmel River State Beach is located along the coast between Carmel and Point Lobos State Reserve. Since the acquisition of the Hudson addition to the reserve, the two units are contiguous. The Odello Ranch acquisition adjoining and a part of Carmel River State Beach and the Gowen Cypress Area that is geographically separated but a part of Point Lobos State Reserve, are fairly new additions to the units in this area. The boundary lines are shown on Map 2, page 7, and a description of the location begins on page 5.

The main objectives of this project are to protect the natural and cultural resources of the two units, to improve interpretive and visitor facilities, and especially to enhance visitor enjoyment of Point Lobos State Reserve in a scenically and ecologically unimpared state forever. Point Lobos is believed by many to be ecologically and scenically the most significant ocean coastline feature in California. Providing new facilities including parking, sanitary facilities, interpretive features, and trails; and removing facilities that damage the environment, will help meet these objectives. Opportunity for recreation is an objective along beach areas that are not ecologically sensitive. Please see page 11 for a complete set of objectives.

The major technical changes proposed are:

- 1. Development of a new entrance road and parking lot and orientation area near the entrance at Point Lobos State Reserve.
- 2. Introduction of a shuttle bus system from the main parking lot to transport visitors around the reserve.
- 3. Removal of parking and picnic facilities, and eventually the road itself, along the south shore. Other access would be provided to the Bird Island area when the South Shore Road is removed.

- 4. Development of new trails to link existing trails and the Gowen Cypress Area.
- 5. Conversion of the Whaler's Cottage and part of the Hudson House to interpretive facilities.
- 6. Removal of maintenance buildings and staff residences from Point Lobos to a location off the reserve, possibly on the Odello property.
- 7. Development of new parking near San Jose Creek Beach and making the existing roadside parking illegal along State Highway 1 next to this portion of Carmel River State Beach.

A full description of the technical aspects of the project are in the Land Use and Facilities Element, page 66.

DESCRIPTION OF ENVIRONMENTAL SETTING

The character of the land surrounding Point Lobos State Reserve and Carmel River State Beach varies from highly developed to rural, and from forest to riparian to grassland. North of Carmel River State Beach the area consists of residential sections, resorts, and the Carmel Mission north of the river. Where the state beach boundary crosses Carmel River, the land consists of riparian growth and the nearby Carmel Sanitation District Treatment Plant.

East of Highway I and to the north in Carmel Valley are many businesses, restaurants, motels, etc. On a hill between the Odello property and the beach west of Highway I is Carmel Meadow subdivision. East of Highway I and south of Carmel Valley extending to the Gowen Cypress area is mostly steep undeveloped land. Part of the land east of San Jose Creek is occupied by a monastery. The area between San Jose Creek and Gibson Creek has been considered for subdivisions; there are existing ranch facilities in this area. The Carmel Highlands and other residential properties are located south of Gibson Creek beyond the Gowen Cypress Area.

A detailed geologic investigation of the Point Lobos area has not been conducted. Before any construction is undertaken, an analysis of how the geology might affect each proposed development should be made.

This area is within the coastal zone and falls under the jurisdiction of the California Coastal Commission. Highway 1 is designated a State Scenic Highway.

Point Lobos State Reserve and Carmel River State Beach are land areas that are environmentally beneficial to the region. Many unusual ecological areas, geologic features, and rare and endangered plant and animal species are protected in these two units of the State Park System.

According to official records of the California Native Plant Society, there are five rare plants in the reserve. Two of these also occur on the federal list of endangered or threatened plants. These five plants are:

Scientific Name

Arctostaphylos pumila Nutt.*

Arctostaphylos montereyensis Hoov.

Ceanothus rigidus Nott.

Cupresses govenian Gord.*

Cupressus macrocarpa Hart. ex Gord.

Common Name

sandmat manzanita Monterey manzanita Monterey ceanothus Gowen cypress Monterey cypress

27

The proposed project will strengthen the protection of the environment in these two units.

ENVIRONMENTAL IMPACT

Significant Environmental Effects of the Proposed Project

Figure 6 is a matrix showing the interaction between the proposed action listed in the vertical column to the left, and the environmental factors across the top. Each interaction was assessed and the environmental effects were rated in one of the following four categories.

Key to Figure 6

- ☐ No Interaction: Project implementation does not cause a significant environmental effect because the proposed development or management does not interact with the environmental factor.
- Beneficial Environmental Effect: The Interaction of the proposed development or management with the environmental factor is favorable.
- Nonsignificant Environmental Effect: Although the development or management interacts with the environmental factor, the effect does not cause a potentially substantial adverse change in the environment, or the significant effect is mitigated by design criteria.
- Significant Environmental Effects: The interaction between development or management and the environmental factor may cause a potentially substantial change in the environment that cannot be avoided if the proposal is implemented as proposed.

^{*}On federal list of endangered or theatened plants

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Davelop Visitor orientation area: Parking fot tonzaved); shuttle bus staging ares; visitor orientation feeling Investigate feedibility of relocating staff seldences from Point Labor to a site at the state beach Develop trail link to existing trails and Govern Cypress Redailps antrance: Increes road length from highway to entrance station; develop new entrance station, and Develop parking lot and restroom facility at either of Remove maintenance buildings and one residence from visiter orientation center. Convert Mudgen House for Interpretive use on a temporary basis; rately portion for staff residence Convert Whater's Cottage to interpretive facility Remove parking at Piney Woods Plonic Area and Designate Carmel River Legoon as a "Natural Pre-erve" and limit access to puided tourn. ENVIRONMENTAL IMPACT OF PHOPOSED ACTIONS Remove all but two residences; remove storage yard and access road along South Shore Roed; rehebilitate these sites Rentove remelaing two residences mer visitor orlantation area eventually Initiate education & docent programs two thes near San Jose Creek Brach FIGURE 6 POINT LOBOS STATE RESERVE CARMEL RIVER STATE BEACH initiate the material chading provide walk-in only, tum-troand area.

♦ Significant

□ No Interaction

Following is a brief discussion of the effects of the proposed actions. Both direct and indirect effects will be discussed as well as short-term and long-term effects. None of the effects were found to be significant; however, several nonsignificant actions will cause minor damage. These can be mitigated. Overall the beneficial aspects of the proposed measures will outweigh the minor damage that will be done to the environment.

1. Effects on Soils

The cuts and fills likely to occur in grading the new entrance road, parking lots, restroom facilities, visitor orientation facility, trails, and the alternative access to Bird Island will likely cause some soil displacement and erosion. Removing facilities, buildings, and paving may also cause soil erosion. The above effects will be short term and will be corrected before significant indirect rilling, sheet erosion, or siltation into creeks or tidepools can take place. Soil compaction due to heavy foot traffic on trails will occur and could indirectly affect vegetation and tree roots. Indirect impact could affect unusual geologic features such as the mina-mounds in the South Shore area.

2. Effects on Energy Consumption

Short-term energy consumption will occur in the construction phases and in removing buildings and facilities. Long-term energy consumption will occur in heating residences (the Whaler's Cottage and Hudson House) if they are used as interpretive facilities. Since these two houses are presently used as residences, the amount of energy used would not increase.

Shuttle busses would use energy, but overall use would be less than what private cars currently use traveling to the various areas within the reserve.

3. Effects on Vegetation

The new entrance road alignment, parking lot, and proposed access to Bird Island parking area will result in removal of trees, grass and shrubs, but should not damage rare and endangered species. Monterey pine would be affected. Damage to vegetation will also occur in developing trails. Several trails will be closed and several picnic tables and parking areas and roads will be removed, and vegetation will return to these areas.

The proposed actions such as exotic plant management, as outlined in the Resource Element, will have beneficial effects on the environment.

4. Effects on Wildlife

Wildlife habitat will be destroyed because of the new proposed entrance road, parking lots at Point Lobos State Reserve and San Jose Creek Beach, and access to the Bird Island area. No rare or endangered species would be affected. Other actions, such as removing parking lots on South Shore Drive and reducing automobile traffic, should benefit wildlife. Designating Carmel River Lagoon as a "Natural Preserve" and thus limiting use to guided tours will result in increased protection of this wetland environment.

5. Effects on Fire Hazard

The danger from fire is always possible whenever human activity occurs and fuel is present. Construction activities, vehicles, and cigarettes are all potential ignitors. The proposals to remove buildings, introduce the shuttle system, and establish prescribed burning in the future will all have beneficial effects by reducing the fire hazard.

6. Effects on Hydrology

Minor surface runoff can be expected from new road, parking lot, and trail surfaces. If not mitigated, these would be expected to cause severe soil erosion and various indirect effects.

7. Effects on Air Quality

Air pollution will be caused by vehicles but will be reduced because of the proposed shuttle bus. Presecribed burning will produce air pollution also.

8. Effects on Noise Level

Vehicular traffic will cause noise. Noise will increase in the orientation area because of the proposed visitor parking lot, but because of the proposed shuttle bus system, overall traffic noise in the reserve will be less. Removal of maintenance shops and residences will reduce noise in the reserve.

Noises from people themselves, such as talking or calling family members together, will have a detrimental effect on wildlife and enjoyment of the unit by visitors.

Natural sounds caused by the surf and wind will drown out most distant sounds.

9. Effects on Light and Glare

The shuttle bus system will benefit the reserve because cars will be eliminated, thereby reducing glare from chrome, windshields, etc. Eliminating parked cars along Highway I near San Jose Creek Beach will have the same effect. This effect will continue at existing and proposed parking lots.

10. Effects on Land Use

Open space will be affected by new construction such as parking areas, roads, etc. However, proposed removal of parking areas along the South Shore Road and along Highway 1 by San Jose Creek, and removal of buildings within the reserve will benefit open space.

The proposed plan will benefit the surrounding area. As development continues in the area, the lands within the reserve the state beach, and the proposed natural preserve embracing the Carmel River Lagoon will become increasingly valuable.

11. Effects on Vehicle Circulation

The proposed entrance road and turnaround area, parking areas at the reserve and at San Jose Creek Beach, and the shuttle bus service proposed for the reserve will greatly benefit traffic circulation.

12. Effects on Archeological and Historical Sites

There is a possibility that earthmoving activities could disturb unsuspected archeological and historical artifacts. Use of Whaler's Cottage as an interpretive facility and greater interpretive emphasis will benefit the archeological and historical resources.

13. Effects on Esthetics

The proposed parking areas, orientation center, and entrance road will have a deleterious effect on esthetics. Also, the proclivity of the public to litter the ground will detract from the scenic quality of the area.

Removal of maintenance and residential buildings near the entrance and parking and picnic facilities from along the South Shore Road will have a beneficial effect on Point Lobos State Reserve; however, an impact would occur wherever these structures were relocated.

14. Effects on Public Services

Public services will remain at about the present level. Possible increases in staffing could increase the need for public services but this effect would be minimal. Removal of maintenance buildings and residences and the possible reestablishment of them on less sensitive lands elsewhere could bring facilities within the sewer district.

15. Effects on Human Community

Population densities in the units would be concentrated around main parking lots and to a lesser extent around trailheads and interpretive facilities. The overall use would not increase. The instantaneous use will be controlled by the operations staff at 450 persons. Many indirect impacts would occur if the total number of cars at Point Lobos State Reserve were allowed to exceed 150 (450 persons). The total use at Carmel River State Beach is not expected to change significantly.

Significant Environmental Effects That Cannot Be Avoided If the Proposal Is Implemented

None of the discussed effects are considered significant; however, some of the nonsignificant effects cannot be completely eliminated either by the proposed beneficial effects or by mitigation measures. For example, the project will always be subjected to vehicle pollution from the visiting public and use of Highway 1. Soil disturbance will always potentially cause soil erosion unless mitigated. Noise and glare are also effects induced by the automobile. Fire hazard, vandalism, and carelessness by the public are always a threat to the environment.

Mitigation Measures Proposed to Minimize the Significant Effects

The beneficial effects of the proposed redevelopment will mitigate many existing deleterious effects on the environment. However, other mitigation measures for the proposed actions will need to be implemented. These are listed below.

- 1. Soil Erosion Controls: Proper designs of trails, culverts, and roads will reduce and prevent accelerated soil erosion. Water bars and revegetation of scarred areas are two specific mitigation measures. The main parking areas will be unpaved, creating a lesser amount of surface runoff than would a paved area.
- 2. Unit Operations: Interpretive programs will have an effect by educating the public about and instilling appreciation for the natural resources of the units, thus reducing human impacts such as vandalism. Existing laws are now strictly enforced by the staff and will continue to be so.
- 3. Protection of Natural Ecosystem: New construction will have some effect on plants and wildlife habitat on the land. As few trees as possible will be removed. No rare or endangered species will be affected. Soils will be protected and erosion will be prevented. Visitors will stay on designated trails and areas.

- 4. Introduction of Shuttle Bus at Point Lobos: Restricting visitor vehicles to a parking area at Point Lobos State Reserve and the use of a shuttle bus during the heavier use periods will reduce many of the impacts that private vehicles have on the environment. Among problems that vehicles cause and that will be reduced are air pollution, noise, energy (fuel) consumption, soil erosion, glare, and landscape blight.
- 5. Resource Element Plan Implementation: This plan will protect many of the features, including rare and endangered species, reverse the spread of exotic species and even of (aggressive) endemic species such as Monterey Pine, reduce fuel hazard, and will protect the environment in general and reverse many adverse effects.
 - The plan discusses effects of human impacts and recommends limits of use and closure of areas. The plan also discusses esthetic problems caused by man-made intrusions and recommends their removal or screening.
- 6. Population Limitations: The size of the parking lots will help limit the number of people visiting the units at one time. The total number of visitor parking spaces at Point Lobos State Reserve will not exceed 150 cars. In addition, staff will limit the instantaneous capacity to 450 persons.

Alternatives to the Proposed Action

No change

This alternative would allow the current situation to continue. Environmental damage at Point Lobos State Reserve and Carmel River State Beach would continue uncorrected. In certain parts of the units, the proposed action is that of no change. For example, no immediate changes are proposed for the Odello property. This land would continue to be leased to an artichoke farmer. No changes are proposed in many areas of both units because the present situation is adequate.

Other Alternative Actions

There are a myriad of project alternatives, resulting from combinations of possible individual actions. Actions that would not protect the environment or that would prohibit visitors to the units are not reasonable. Several issues were discussed before the present plan was decided upon.

- 1. Entrance and parking area at Point Lobos State Reserve: Another entrance was proposed which would bring traffic to an area near the Hudson house. Because of the scenic intrusion from Highway I and possible environmental damage, such as increased road building, this alternative was thought not to be best. Other proposals have been advanced, but these are academic since the parcels have not been acquired.
- 2. Use of the Hudson House: Proposals varied from the proposed plan to removing the building, to using it as a residence, to expansion of the structure to a major interpretive facility (assuming parking was nearby as in #1 above).
- 3. South Shore Road: A final determination has not been made. If environmental damage such as compaction continues, this road would be scarified and trail access provided, or an access road for shuttle bus use only would be built.

4. Other Alternatives: Other decisions not yet finalized are parking for the beach at San Jose Creek and whether or not to place facilities at the Odello property.

The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The primary objectives of the Resource and Land Use and Facilities elements are to protect the resources of Point Lobos State Reserve and Carmel River State Beach, and to enhance visitor enjoyment, visitor appreciation, and recreation opportunities.

The proposed short-term plans are in the best interests of the long-term plans of the two units. Past mistakes, increased visitor demands on use, and the new acquisitions all make it necessary to take a long-term look at these two units.

If the department did not own these parcels, other uses such as grazing, development, etc. would take place. Levels of public access and enjoyment and protection of the environment would be greatly reduced.

Any Significant Irreversible Environmental Changes That Would Be Involved in the Proposed Action Should It Be Implemented

The proposed action would continue and strengthen the protection of the environment. Some irreversible environmental changes are anticipated:

- 1. The commitment of nonrenewable resources, such as oil, gasoline, and gravel, to construct roads, parking areas, and other park facilities.
- The loss of open space and vegetation and the possible displacement of wildlife due to development in the area of the parking lots and new entrance road. This would be offset by other areas that would become more open due to removal of buildings, roads, and trails.
- The emission of exhaust from vehicles and of fumes from fuel used to heat buildings. This would be reduced at Point Lobos State Reserve because of the proposed parking lot and shuttle bus system. Maintenance and residential buildings at Point Lobos State Reserve would be removed and moved to the less environmentally sensitive areas.

The Growth-Inducing Impact of the Proposed Action

This project would do nothing to increase human populations in the area although it would improve the quality of life.

The present level of use would not be increased. Parking proposed for Point Lobos State Reserve would equal that of the existing parking lots. Parking proposed for San Jose Creek Beach would provide fewer spaces than will be eliminated along the highway. Parking near the lagoon (proposed Natural Preserve) would not be increased.

References Used and Organizations Contacted in Preparing This Draft Environmental Impact Report

Organizations:

California Department of Parks and Recreation
Development Division
Operations Division
Resource Preservation and Interpretation Division
Natural Heritage Section
Cultural Heritage Section

References: See Selected References section of this document.

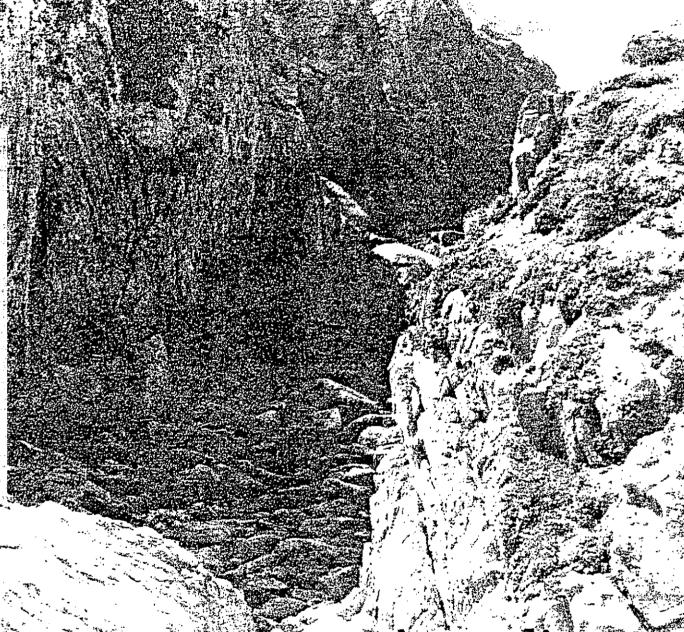
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Appendixes

Appendix A
Public Involvement Material

PT. LOBOS STATE RESERVE and CARMEL RIVER STATE BEACH

SPRING, 1978 .NEWSLETTER

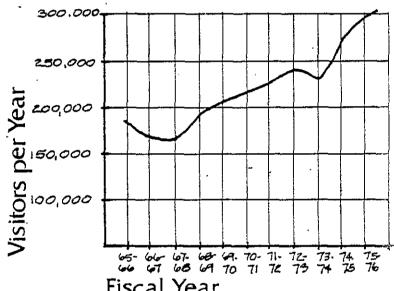


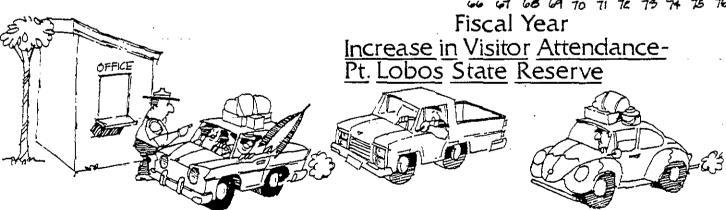
What's Happening:

People from around the world responded to our questionnaire with a wide variety of ideas. There was general agreement on reducing the numbers of automobiles and mixed feelings on whether a visitor center is needed. Those who attended Workshop No. 1, however, overwhelmingly supported using the recently acquired property north of the Reserve as a visitor center site.

Our Next Workshop!

Our second public workshop will be held on Wednesday, May 31, at the Del Monte School, 222 Casa Verde Way, Monterey. Its purpose will be to present alternative plans for resource management and visitor use.





As many of you already know, the California Department of Parks and Recreation is currently preparing a plan for the future of Point Lobos State Reserve and Carmel River State Beach. Although these units have been in the State Park System for many years, the steady increase in park visitor use has made it necessary to re-evaluate their design.

Ten years ago, about 170,000 people visited Point Lobos. Last year, there were over 270,000 visitors, and many more were turned away. On a typical summer weekend, the peaceful atmosphere of one of the most beautiful spots in the world is disappearing. The scene is gradually being dominated by hundreds and hundreds of people rather than the natural features that made Point Lobos famous, If this trend is allowed to continue, some of the Reserve's precious qualities may be lost forever.

The purpose of this newsletter is to summarize what we heard the public say about Point Lobos and Carmel River in the questionnaire and at the first workshop. We would like to thank those of you who have participated. We have been very impressed with your enthusiasm and knowledge of the project.

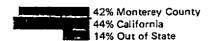
SUMMARY OF QUESTIONNAIRES

Our questionnaire served as a convenient method of reaching to people who live outside the Monterey area and others unable to attend the first workshop. Out of the 2000 questionnaires distributed at the Point Lobos entry station between February 1 and March 30, about 370 have been returned for a response rate of about 18 percent. This is above the 8 to 12 percent range projected by the Yosemite National Park master planning team as typical for this type of questionnaire.

Here is a description, with charts, of how you answered our questions:

1. Where do you live?

The majority of respondents came from other parts of California, primarily from the San Francisco Bay Area, Los Angeles, and San Diego area. A close second in returns was the Monterey County area, with 42 percent, illustrating that Point Lobos and Carmel River State Beach are visited frequently by local people. About 14 percent were from out-of-state and as far east as New York, and two from Argentina and one from England.



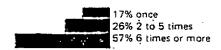
2. How many times have you visited Pt. Lobos?

The overwhelming majority had been to Point Lobos before and most visit frequently. Over 64 percent of these had visited six or more times, and many of these responded "innumerable" and "countless" times. Since visitors keep returning to the Reserve, we can expect attendance to continue its rapid increase.



3. How many times have you visited Carmel River State Beach?

Answers to this question were interesting. We found that about 45 percent of those who visited Point Lobos never went to Carmel River State Beach. Some questioned its location: "Where is it?", "Don't know if I've been there or not." About 83% of those who had visited, however, returned at least once and most returned frequently. The vast majority of these returnees were from Monterey County thus supporting the fact that the beach is primarily used by local residents.



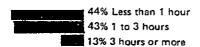
4. How much time do you spend at Pt. Lobos?

Only 4 percent spend less than one hour at the Reserve. Some 57 percent spend one to three hours, and 39 percent spend three hours to all day. Since most visitors stay at Point Lobos for such a long time, it is obvious how the Reserve becomes crowded quickly. Cars leave at a very slow rate, and, once its parking areas are filled, cars line up quickly and the wait can be long.



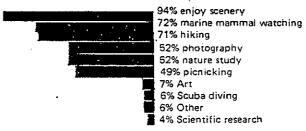
5. How much time do you spend at Carmel River State Beach?

About 44 percent spend less than one hour at Carmel River State Beach. Many had never been there before. 43 percent reported that they spend one to three hours at the beach. In contrast to Pt. Lobos, only 13 percent of the respondents spend three hours or more at Carmel River State Beach.



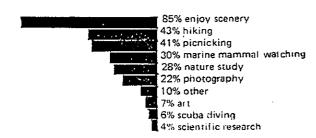
6. What do you do at Pt. Lobos?

The activities that received the greatest amount of participation were sightseeing, marine mammal watching, hiking, photography, and nature study. Although the picnic facilities are limited at Pt. Lobos, about half of the visitors picnicked. Many of these people probably used the area between Sand Hill Cove and Pebbly Beach where picnicking is allowed, but tables are unavailable. Only 6 percent reported that they participated in scuba diving. Other activities mentioned were "bird watching", 'tide pool study", "ponder and wander", and "sitting in peace".



7. What do you do at Carmel River State Beach?

Approximately half of the respondents had ever been to Carmel River State Beach. Interestingly, the percentages of people who participated in each activity were very similar to the figures for Point Lobos. Although only 6 percent said they scuba dived, this percentage probably would have been higher if more people were aware that San Jose Creek Beach is a part of Carmel River State Beach. Other activities mentioned in the "other" category were jogging, sunbathing, birdwatching, and outdoor games.



OUK FIRST WORKSHOP

Our first workshop on Pt. Lobos State Reserve and Carmel River State Beach was held at Del Monte School in Monterey on January 31, 1978. Most who attended this workshop live in the Carmel-Monterey area. Some of the organizations represented at the workshop included the Pt. Lobos Advisory Committee, Audubon Society, Sierra Club, Sierra Club Diving Section, Départment of Fish and Game, Pt. Lobos Natural History Association, the Monterey Peninsula Herald, plus a number of concerned. About 70 people attended the meeting.

Each group was aware of the traffic and parking problems at Pt. Lobos and Carmel River State Beach. Many felt that parking should be removed entirely from the Reserve proper. It was suggested that automobiles be removed and replaced with limited use of an elephant train which could be used by handicapped persons and divers with heavy gear. Most favored was the newly acquired "Hudson" property north of the entrance gate as a possible site for a parking lot.

An overwhelming majority supported the idea of using the Hudson House as a visitor orientation center. Most felt that there should be parking adjacent to this facility.

To restrict human impact that has caused erosion and damaged vegetation, some restoration of the Reserve was suggested. There was great concern for trail maintenance and the deterioration of bluff areas. The re-routing of some trails was proposed.

Another major issue was that of resource management. A number of groups favored native plant communities and to increase the diversity as well as decrease the fuel buildup and fire danger. There was some opposition to this method of management. Restoration of viewsheds was also mentioned. A recommendation was made to cut a swath through the trees so that the ocean may be seen from Whalers Knoll. There were also differences of opinion about whether there should be more control or more use of underwater areas of the Reserve by divers.

Other concerns expressed at this workshop were:

- A variety of facilities for hiking, photography, bird watching, and picnicking should be incorporated into the plan.
- There should be more emphasis on self-guided trails.
- Existing picnic tables should be taken out of the Main Reserve, and relocated elsewhere; possibly the Hudson property.
- The 'Odello-West' property should remain an arthichoke field.
- · More dog control.
- Development of Gowan Cypress area (east of Highway 1) with self-guided trail system.
- · Fire rings should be installed at Carmel River State Beach.
- *Care should be taken while designing a circulation system in the Reserve in order to keep it "relatively pristine".
- To limit the amount of visitors entering the Reserve, there should be a reservation system or a limitation of the number of parking places to be provided.
- If the Hudson House is used as a visitor center, picnic tables should be installed near it.
- More park personnel is needed to manage the area.
- · Benches are needed along trails.
- ·Whalers Cove could be used by small craft as a harbor of refuge.

- •The mouth of the Carmel River should be expanded to provide a larger area for the existing bird and wildlife sanctuary (lagoon area).
- · Provide picnic facilities on "Hudson and "Odello" properties.
- Parking can be located south of the Hudson House with a tram service running from it to the Reserve.
- •The "Hudson" and "Odello" properties should be reforested.
- · All shoulder parking along Highway 1 should be eliminated.
- More nature books and educational materials should be made available.
- There should be a docent (trained volunteer) program and a planned naturalist program, including natural history instructions and instruction on public behavior.
- More rangers needed to enforce docent and naturalist programs.
- Hudson House and property should be opened to public immediately.
- Hudson property should be left for grazing to prevent overgrowth of shrubs and Monterey Pine.
- Parking should be on west side of Highway 1 so people will not have to cross the road.
- A dam could be constructed at the mouth of the Carmel River to provide water for birds during periods of low water flow.

"Odello West" property is too far removed from Pt. Lobos for a visitor center location but, could possibly be used as a camping site.

As you can see, people have many ideas on what they would like to see at Pt. Lobos State Reserve and Carmel River State Beach. At our next public workshop, we will be asking you to help us design a single plan from the alternative plans we have developed.

. We would appreciate your help in passing this information on to your friends, members of your organization, or people on your staff.

If you are interested in additional copies of this newsletter, or if you have questions, comments, information to share, or are not on our mailing list, please write or call us at (916)322-7296.

Please plan to attend our next workshop. We appreciate your participation in the planning process.



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
P.O. Box 2390 Sacramento 95811

Pt. Lobos State Reserve and Carmel River State Beach Planning Team

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Betsy Barsanian

WHERE WE ARE IN THE PLANNING PROCESS:

STEP 1	ORGANIZING THE PLANNING JOB
STEP 2	GATHERING INFORMATION
STEP 3	DEVELOPING ALTERNATIVES
STEP 4	EVALUATING ALTERNATIVES
STEP 5	COMPOSING A SINGLE PLAN
STEP 6	STATE PARK AND RECREATION COMMISSION
	PUBLIC HEARING OF PLAN

PT. LOBOS STATE RESERVE and CARMEL RIVER STATE BEACH

SPRING, 1978 ... NEWSLETTER





Pt. Lobos State Reserve and Carmel River State Beach Planning Team

DEPARTMENT OF PARKS AND RECREATION P. O. Box 2390, 1416 Ninth St., Room 1449 Sacramento, California 95811

8. What do you like about Point Lobos?

In general, the visitors mentioned those qualities that have made Point Lobos famous — its rocky shoreline, tide pools, sea otters, Cypress trees, wildflowers, and overall beauty. Although we received hundreds of comments; these are some of the more interesting comments:

- I have always felt like a different person after visiting have visited no other place quite like it.
- · Its grandeur and "let nature alone" feeling.
- . The unending patience exhibited by the staff.
- · Designated trails and wire guiding paths.
- · The scenery, wildlife but, most of all, the sea otter.
- Clean and equipped bathrooms.
- When the weather is horrible, fewer people go there and it is
- Its spectacular vistas and crashing ocean-plus the solitude on weekdays in winter.
- I go weekdays when there are no crowds so I like everything.
- The preservation nature of the park policy with the relatively low emphasis on strictly recreational uses..
- > It's a place to walk in peace.
- The excellent scuba diving. The regulations and their enforcement have maintained an excellent unspoiled example of sea life.
- This is one of the few state parks where a person with a wheelchair can enjoy nature, i.e., along the road-why not capitalize on the fact and add a few paved roads. Zion National Park has one — it's terrific.
- I think it would be absurd to have programs "visitor centers" — slide shows or any educational nonsense at either of these places.
- A small park, but almost every square foot of it is exquisite.
 if I had only one day to spend in California, I would spend it there.

9. What don't you like about Point Lobos?

Many respondents had no complaints about the Reserve. However, we did receive a wide variety of comments on how Point Lobos might be improved. Some of these were:

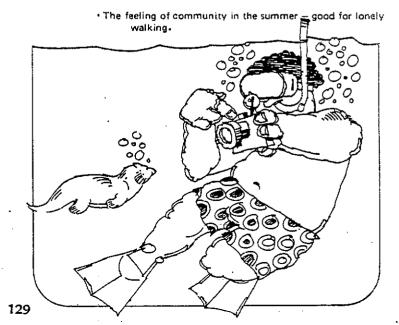
- · Lack of a visitor orientation center to educate the public.
- · Benches should be provided for resting along the trails.
- · Insufficient parking at gate,
- It's becoming too popular; soon it will be necessary to have additional regulations and restrictions.
- Scuba divers taking over at Whaler's Cove.
- · Not enough picnic areas and toilet facilities.
- More parking areas are needed inside and outside the Reserve, When Reserve is full, a notice should be posted at Highway 1 entrance to stop cars from going to entrance station and having to turn around and leave.
- •There are so few places to sit down and be glad to be there and alive.

- Inadequate parking and diving access too few divers are allowed at one time.
- The possibility of forbidding cars and parking within the area. This would prevent those who are not extremely active, access to the area.
- · All the cars. Take the cars out of the Reserve.
- The vehicles, the traffic, the crowds on weekends.
- I'd like a picnic area near the water, instead of looking at a parking lot..
- We don't like a lot of signs, but it might be nice to label plant life in one area.
- Too many people it should be limited to reservations like trails at Big Basin. No cars! No picnic tables!
- Not enough trailside information and identification of trees, plant life, geology and marine life.

10. What do you like about Carmel River State Beach?

Unlike Point Lobos where many respondents mentioned its peaceful atmosphere and feeling of solitude", most visitors commented on the physical features of Carmel River State Beach. The natural qualities spoken of most frequently were the lagoon, birds, marine life, and views of Point Lobos. The following comments reflect the fact that the beach is much more recreation-oriented than the Reserve.

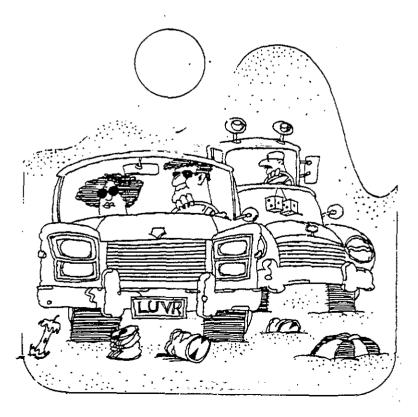
- . The landscape and scenery.
- . The birds, the flowing river, and the lagoon area.
- Allowance of beach fires and bird sanctuary scenery and people watching.
- The open views out to sea and over to Pt. Lobos.
- · Scuba availability -
- I like walking the trails and watching the sea otters in the park south of the river.
- * Underwater marine life .
- * Availability at early hours for birding.



11. What don't you like about Carmel River State Beach?

There were many complaints on the frequent crowded conditions, particularly the traffic problems near San Jose Creek Beach. Several visitors felt providing additional facilities, such as parking areas and picnic sites, might improve the congested situation. Some of the comments were:

- It is too noisy, drag racing occurs in the parking lot, and dogs run loose.
- Dogs not on leash that chase birds, blaring car radios, lack of a small tower to scan the needs for birds.
- Lack of parking facilities on Scenic Drive, scarcity of benches,
- *Too many people at times and too much litter.
- · The trash inconsiderate people leave.
- Cars that park with loud radios, car-washing sometimes occurs, not enough informational signs.
- · Inadequate parking for diver entry at San Jose Creek Beach.
- Trampling of wild flowers and dunes, dogs, motorcycles, and boating in lagoon.
- Too many people. I have to walk too far on deep sand before I can hike on trail.
- *All the cars lined up along Highway 1 near San Jose Creek Beach.



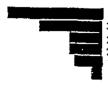


12. Should there be a visitor center?

Comments for and against a visitor center were equally divided. Although many people felt it was unnecessary and would detract from the reserve, others thought it would greatly enhance the visitor experience. Comments in favor of a visitor center and where it should be located included:

- · At the entrance kiosk
- One at Whaler's Cove and another at the Carmel River parking lot
- · Within trees at Point Lobos
- · At the Hudson House
- · Near Little Mound Meadow'
- On the recently acquired Hudson property between Point Lobos and San Jose Creek Beach
- · Near the parking lot next to the Cypress Grove Trail
- · At the Carmel Ranch Shopping Center area
- On the Hudson or Odello property, but not within the Reserve
- . In the Hudson House until another site is chosen
- I'm not sure, but it would be nice to have some place to go for information, perhaps to see displays, ask questions, etc.
- 13. What kinds of educational programs would you like to see?

The graph illustrates how people responded.



59% self-guided tours
39% guided tours
20% school tours
20% talks, slide shows, etc.
18% none of these
6% other

Appendix B

SUMMARY

POINT LOBOS RESERVE MASTER PLAN REPORT

Olmsted Brothers

1935

Part III. Specific Recommendations for Preservation and Utilization

Section A. GENERAL OBJECTIVES

- 1. Preservation: to protect and perpetuate those physical features and conditions of the Reserve which contribute to its important and peculiar values; and to do this as perfectly and completely as possible consistently with reasonable use of the Reserve by visitors in the manner indicated below.
- 2. <u>Utilization</u>: Preservation is important only as a means to utilization; but practically, it must be given precedence over it because conditions here are very vulnerable and irreplaceable.

Section B. Preservation: -

1. Fire.

(a) Minimizing Sources of Fire.

Fires kindled for use should be absolutely prohibited except in a very few fireplaces, all below the beach bluffs. It is desirable to eliminate all fireplace picnics south of Carmel Cove; very certainly so if "Option 4" is purchased, permitting their removal to that area.

Smoking, the chief source of danger, can be rendered materially less dangerous if it is prohibited by the Warden except when it is clearly safe; and if there is sufficient thorough patrolling throughout the whole Reserve to make it effective.

(b) Minimizing the Presence of Combustible Materials.

No "cleaning-up" of dead wood litter and other inflammable material should be permitted as a fire-protection measure, since danger of damage from this source would be greater than from fire.

(c) <u>Fire-proof zones</u>, created for fire-protection are not recommended, because if made effectively broad and clean they are themselves grossly destructive of Reserve values; and because the economic cost of maintaining them effectively would give greater safety if applied to other methods.

(d) Prompt Discovery and Extinguishing of Fires.

This requires adequate watchful patrolling and quick certain extinction upon discovery.

There should be an adequate tank-truck stationed in the Reserve at all times, and the Warden and a deputy should be trained in its use.

Areas away from the roads should be kept accessible to a truck by removing a bush or a limb here and there creating obscure routes which would not be obvious but which should be known to the truck drivers.

Adequate facilities, centrally located, for quickly refilling the truck are necessary.

Visitors.

Damage by visitors is inevitable, but must not be allowed to exceed the natural restorative processes; since this would create cumulative depreciation. Moreover, this balance should be maintained at as high a level of natural values as possible.

(a) The general rules should forever prohibit the disturbance of any natural object whatsoever; with two possible exceptions and no others:

lst. In rare cases special permits should be granted for taking specimens for limited scientific purposes associated with the Reserve, permanent records of the results being kept.

2nd. Possibly, revocable permits should be issued for fishing with hook and line, permanent records being kept of each permit and the behavior of the permittee.

Friendly education of visitors is necessary, and watchfulness in securing faithful observance of the rules.

If because of insufficiency of funds for personnel or of incompetency of personnel or otherwise, such wanton damage continues to exceed restorative processes, the Reserve should be closed in whole or in part until these conditions can be remedied.

(b) Damage by Wear and Tear.

(1) By Automobiles.

Provide well kept roads and parking spaces, and confine cars strictly to these.

Temporary barriers should be used to discourage perpetuation of tracks across meadows, and in a few places permanent ones will be needed.

(2) By Horses

This is likely to remain small, and requires no special restriction outside of the North Headland Preserve. If it should increase it might become necessary to define carefully planned trails.

(3) By Trampling of People.

In general, indiscriminate rambling is slight and trails would be more objectionably artificial than foot-worn tracks produced here and there. In general, therefore, people should be permitted to roam at will and no trails should be constructed with the exceptions noted below:

Along the Shore Margins.

Because of the vulnerableness of the vegetation and soil here, and because of the concentration of people, damage is considerable. Trails are therefore necessary, sufficient for the movement of the public, and people should be kept to them as closely as possible.

Prohibition of fishing in the North Headland Preserve should be permanently enforced, because of the damage done there by fishermen scrambling up and down the banks.

Paths, sometimes with steps, within the North Headland Preserve and without, should connect the main shore trails with the bare rocks and beaches at carefully selected places.

Access to worn areas between these trails should be stopped until they can heal over and thus command the respect of well disposed people.

In a few cases, arrest gully erosion started or accelerated by human wear and tear; 1. by diverting water, 2. by culverts or drains, 3. by riffles of stakes and brush, and rarely of stone.

In the North Headland Preserve, special protection is needed throughout.

(See Plate II for permanent trail system.)

People should be required to keep to the trails, free permits being issued by the Warden for leaving them for specific purposes.

"Exclosures", some temporary and some permanent should be established from which the public is excluded as completely as possible. Experimentation with barriers for this purpose is needed, to find the least conspicuous construction which will be effective. These areas should be posted.

The top and southerly slopes of Whalers Knoll, included in the North Headland (because of the difficulty of marking the boundary between the Knoll and the north shore) are not sufficiently used to need trails, yet the public should not be barred from this interesting area. Here, therefore, an exception should be made to the general rule requiring people to keep on the trails in the North Headland Preserve. Circulation should be made possible without breaking down bushes, by removing those actually obstructive to passage along certain definite routes.

3. Damage by Administrative Employees.

(a) By Motor Equipment.

Wheeled vehicles in the employ of the State should be required to avoid leaving the roads even more meticulously than the public; and in cases of clear necessity, only with permission of the Warden; of all which cases a complete record should be kept. These are 1. Fire not accessible from the road, 2. repair or maintenance work making it unavoidable, not merely convenient.

(b) In Other Ways.

"Improvements" are among the greatest dangers to the values of the Reserve and should never be undertaken until subjected to the closest scrutiny from many points of view. The presumption is always that it will prove more injurious than it seems.

Section C. <u>UTILIZATION: "Improvements" which are and are not justifiable in order to provide for utilization.</u>

1. Roads, and Parking Spaces.

The Reserve can best be enjoyed on foot, and automobiles impair its highest values, 1. by their presence in the landscape and 2. by scarring the landscape with roads, etc.

Nevertheless, their admission is justified, 1. to enable people to drive within easy walking distance of the significant places, and 2. to give people in cars glimpses of what may be seen by getting out and walking.

- (a) Parking Places. (See Plate I.)
- (b) The Permanent Road System. (See Plate I.)

To keep the road margins clean from disturbance by maintenance and by driving off the edges, a prevailing width of 18 feet and a hard bituminous surface is indicated.

2. Trails. (See Plates I and II.)

Extensive research has shown that there are few places to which the public ought to be given access which are not already traversed by one or more "volunteer" trails. The trail plan therefore becomes a selection of those which will give access to the many fine areas that should be accessible, making a few changes in location to make the trails less damaging, adding a few connecting links and obliterating needless trails.

To adapt the selected trails to indefinite use necessitates making them capable of withstanding wear and more inviting to walk on than adjoining ground. There should be added often a light surface of rotten granite, sometimes a little soil to protect roots, rarely a plank bridging, and at steep places, inconspicuous steps of granite.

A dependable Water Supply.

For a storage tank or reservoir, Rat Hill is the least objectionable and most effective location.

Permanent pipelines should be laid within permanent road locations wherever practicable to avoid very objectionable scars elsewhere.

4. Sanitary Facilities.

(See Plate I) Add privies at Bluefish Cove parking space and possibly at the Warden's Cottage.

It is desirable to change to water closets, but before this is done a very careful study should be made in each case of the effect of the effluent on the vegetation.

5. Problems of Picnics, Bathing and Boating and Related Activities

(a) Picnics.

These may serve merely to satisfy hunger, thus conditioning a person for continued enjoyment of the Reserve, or they may be primarily social or gastronomic functions making use of pleasant surroundings.

Even the large organization picnics serve in some degree the higher purposes of the Reserve, since a few stragglers, induced to come by the function, will appreciate the area; but the cost of inducing these few to come is too great and the large "organization" picnic ought to be definitely ruled out, except possibly in option 4.

Fireplaces, because (1) of the danger of escape of fire, (2) of the temptation to "clean-up" inflammable material, and (3) because they often emphasize the social and gastronomic uses of the Reserve at the expense of more precious values, should be confined to a very few fireplaces as discussed under "Fire" above. Also, because of the accumulated cars that they invite, it is debatable whether they ought not to be discontinuted south and west of Carmelo Cove.

Option 4. The area north and east of Carmelo Cove is detached from the Reserve proper, and is much more man-handled.

It is desirable to include Option 4 primarily as a protection against private development on this treeless and dominating site; but would also provide excellent opportunity for picnic and bathing facilities. It also includes the probable site of Portola's camp. The area north and east of Carmelo Cove, it is recommended, be included in an <u>annex</u> and screened from the Reserve proper by pine woods planted along the high ridge. A parking area should then be established near San Jose Beach with free access from the highway but no connection with the Reserve road system. All picnic use should then be moved to this annex, and parking along the south shore between spaces (1) and (4) should be discontinued.

(b) <u>Bathing</u> by small groups who come dressed for it should be permitted along the south shore.

(c) <u>Boating</u>, because it is dangerous at this location, and because it would endanger the refuges of Sea Lions and the bird refuges is not to be encouraged.

Carmelo Cove, one of the few harbors of refuge south of the Golden Gate should be kept as such and not be developed into a "home port" with facilities serving yachts and yachtmen. Facilities for storage and repair and other harbor-side conveniences should be prohibited, only a simple landing being provided.

6. Other Service Facilities, Including Buildings.

The location of the Warden's Cottage and attached service area is the best that could be selected.

Service functions have overflowed the small space allotted, a very dangerous business, breaking down the sharp differentiation between service areas and those on which the values of the Reserve depend.

Service space must be adequate, and its boundaries permanently marked, and any necessary extension made with great deliberation. No "spilling over" should be tolerated.

- (a) The Headquarters Service Group, as now defined, cannot be extended west or southwest, but might be somewhat extended east and southeast, keeping a screen between it and the highway.
- (b) <u>Supplementary Service Area</u> is needed for functions needing more room but not needed close to headquarters. (Storage of bulky materials.)

Rat Hill, the present site for such an area, is the least conspicuous site available. A site in Option 4 would be permanently far preferable. (See Plate I.)

- (c) An Experimental Nursery is desirable some day and should go either in option 4, or if that is not available, on the ridge east of the old Village.
- (d) Educational Facilities, which should be limited to reference material and not something substituted for direct observation, if limited in extent might be conveniently housed in association with the Warden's Cottage. If expanded to include an attendant, it should be transferred to the Annex. Any such expansible function in the quarry would be dangerous, only a launching and landing place, and a small building for State protective boating equipment should be permitted.

The Whalers Cottage, because a study of its development as a permanent empoyees dwelling shows it to be a too expansible business, it is recommended to remove this, and to keep all buildings for employees in the Buffer Zone within the screened service units. Its historic value is not sufficient to justify retaining it as a monument in this natural Reserve.

7. Certain Manipulations of Vegetation, necessary or permissible as means to proper Utilization of the Reserve; the Dangers thereof; and the Limitations which should control them.

The importance of avoiding artificial manipulation of the vegetation of the Reserve, by planting, cutting, or "clean-up" is discussed in Part I, Sec. 7, pp. 47 through 55.

Exceptions

(a) Removal and Shifting of Vegetation, Dead or Alive.

Trail and road obstructions, living or dead must be removed; and much of the material thus produced can be used to increase the natural obstructions to leaving the trails, although the two should not be done as one operation because of the danger of having the first operation influence the character of the second.

Keeping trails open should in general be done by removing whole shrubs and large limbs to avoid a pruned hedge-like appearance.

Cuttings to open or maintain views are <u>not</u> recommended, or in general for controlling landscape values from any special point of view; hoping that gains will counterbalance losses. If after some years a real progressive loss of values becomes apparent, a careful review of this policy will be required.

(b) Planting and related Positive Control of Vegetation for Effect on Landscape.

(1) Protective "Buffer Zones" bordering the Reserve. The impressiveness and value of things seen, whether they be rare museum pieces or a rarely undisturbed landscape, will be reduced by distractions caused by harmonious surroundings. Therefore "Buffer Zones" are introduced to screen out the inharmonious surroundings.

In the case of Point Lobos, the "Buffer Zone" (1) shall present an appearance as closely akin to the Reserve proper as practicable, and (2) shall effectively obscure less harmonious conditions beyond. This will often require "nature faking" in planted materials.

The border between this and the Reserve needs to be definitely marked and the treatment clearly differentiated, although it should be unmarked by any visible barrier.

Such a Zone should completely enclose the Reserve on the landward boundaries. (See Plate III.)

(2) Within the Reserve Proper.

Facilities which cannot be kept in the Buffer Zone (such as privies and parking spaces) tend to impair the values of the Reserve just in proportion to their visibility; and within the area allotted to each of them, planting or other artificial operations which will render the artifact as little conspicuous as possible, should be permitted. Beyond these limits planting in the Reserve would be taboo.

The only possible basis for an exception to this would be that a future comparison with the present study showed serious progressive losses of value that only manipulation of the vegetation would prevent.

Appendix C

Cousteau Letter

Thalassa, Incorporated 8440 Santa Monica Blvd. Los Angeles, California 90069

(213) 656-3960

October 28, 1970

William Penn Mott, Jr.
Director
Department of Parks and
Recreation
P. O. Box 2390
Sacramento, California

Dear Sir:

One of our teams, under the leadership of my son Philippe, has studied the aura off Carmel Bay and Point Lobos for several weeks mainly to study the ecology in relationship with the sea otter population.

While we were performing our studies, we had in mind the extension of Point Lobos State Reserve as proposed by Charles Mehlert. We agree with Mr. Mehlert's recommendations, and we have found from our own explorations:

- 1. That the proposed_area is extremely rich in marine fauna and flora;
- 2. That the underwater sceneries are very beautiful;
- 3. That the local ecosystem is, nevertheless, limited in size and thus is very vulnerable. In fact, there are preliminary signs of possible degradation. It badly needs protection;
- 4. But that it is surrounded by private property estates which reduces the main access to the sea and makes controls easier than practically anywhere else.

We thus independently recommend the immediate extension of Point Lobos State Reserve to the entire area ranging from Cypress Point to Yankee Point and extending at least to 122° of west longitude.

But we strongly warn against dangerous compromises: a) tide pool and sub-littoral field trips have proved to be disastrous—Any collection of specimen for other than necessary scientific research purposes (even for educational purposes) must be strongly prohibited. b) any kind of fishing, including spearfishing and collection of minerals, vegetables and animals must be totally forbidden—spearfishing mainly eradicates larger animals that may take decades to grow and frightens the fish during their spawning ceremonies.

May I express the wish that Carmel Bay, thanks to a determined and vigorous program, will remain one of the rare intact areas in a generally dying marine environment.

Most sincerely yours,

/s/ Jacques-Yves Cousteau

JYC:LL

Appendix D

Excerpts from SB 1892, Public Resources Code, Fish and Game Code, and Administrative Code, Title 14

Excerpts from SB 1892

LEGISLATIVE COUNSEL'S DIGEST

SB 1892, as amended, Nejedly. -Cultural General Plan; historical units; cultural preserves.

...(2) Under existing law, the Department of Parks and Recreation is required to prepare, and the commission is empowered to approve, a resource management plan and a general development plan for each state park system unit.

The bill would <u>instead</u> required the department to prepare, and empower the commission to approve, a general plan for each unit consisting of specified elements.

...SEC. 7. Section 5002.2 of the Public Resources Code is amended to read:

...and prior to the development of any new facilities in any previously classified unit the department shall prepare a general plan or revise any existing plan, as the case may be, for the unit.

The general plan shall consist of elements that will evaluate and define the proposed land use, facilities, operation, environmental impact, management of resources, and any other matter deemed appropriate for inclusion in the plan.

The general development plan shall constitute a report on a project for the purposes of Section 21100.

The resource management plan and general development. The general plan for a unit shall be submitted by the department to the State Park and Recreation Commission for approval.

SEC. 6.

- (b) The resource element of the general plan shall evaluate the unit as a constituent of an ecological region and as a distinct ecological entity, based upon historical and ecological research of plant-animal and soil-geological relationships and shall contain a declaration of purpose, setting forth specific long-range management objectives for the unit consistent with the unit's classification pursuant to Article 1.7 (commencing with Section 5019.50) of this chapter, and a declaration of resource management policy, setting forth the precise actions and limitations required for the achievement of the objectives established in the declaration of purpose.
 - Sec. 8. Section 5002.3 of the Public Resources Code is amended to read:
- 5002.3. A public hearing shall be scheduled by the State Park and Recreation Commission to consider each matter of classification or reclassification of a unit and of approval of the department's resource management-plan and general development plan for a unit. Notice of hearing shall be posted in plain sight at one or more places within the affected unit, published in one or more newspapers of general circulation in each county within which the affected unit is located, and mailed to every person who has filed a request for notice of hearing with the State Park and Recreation Commission. If the notice of hearing is published in a weekly newspaper, it shall appear therein on at least two different days of publication, and if in a newspaper published oftener, there shall be at least five days from the first to the last day of publication, both days included. The content of the notice of hearing shall substantially comply with the requirements of Section 11424 of the Government Code.

Copies of the department's inventory of features, in the case of a hearing on classification or reclassification, or copies of the department's resource management plan and general development plan, in the case of a hearing on approval of the plans, shall be made available to the public at each of the department's district offices on the last date of publication of the notice.

The hearing shall be held by the State Park and Recreation Commission in, or within a radius of 100 miles of, the City of San Diego, Los Angeles, San Franisco, San Bernardino, Eureka, Redding, Fresno, or Sacramento, whichever is closest to the unit affected, not less than 30 days, nor more than 60 days, after the last date of publication of the notice. However, the Cities of Eureka and Redding, and the area within a radius of 100 miles of each of these cities, shall be considered as a single location for hearings of the commission, and not more than one hearing in any year may be held at that location. The hearing shall be conducted in the manner specified in Section 11425 of the Government Code. The vote of each individual member of the State Park and Recreation Commission on each matter of classification or reclassification and of approval of the department's resource management plan and general development plan shall be recorded when the final decision of the State Park and Recreation Commission is announced.

Sec. 9. Section 5002.4 of the Public Resources Code is amended to read: 5002.4 Following approval by the State Park and Recreation Commission of the resource management plan and general development plan prepared by the department pursuant to Section 5002.2, the department shall, without delay, submit to the Legislature for review the department's inventory, resource management plan, of features and general development plan, and the State Park and Recreation Commission's classification or reclassification decision.

Excerpts from Public Resources Code

The portions of Section 5001.5 that deal with State Reserve classification and State Beach classification are as follows:

"(b) State reserves. State reserves, which consist of areas embracing outstanding natural or scenic characteristics of statewide significance. The purpose of a state reserve is to preserve its native ecological associations, unique faunal or floral characteristics, geological features and scenic qualities in a condition of undisturbed integrity. Resource manipulation shall be restricted to the minimum required to negate the deleterious influences of man.

Improvements undertaken shall be for the purpose of making the areas available, on a day-use basis, for public enjoyment and education in a manner consistent with the preservation of their natural features. Living and nonliving resources contained within state reserves shall not be disturbed or removed for other than scientific or management purposes.

State reserves may be established in the terrestrial or underwater environments of the state."

(d) State recreation units. State recreation units, which consist of areas selected, developed, and operated to provide outdoor recreational opportunities. Such units shall be designated by the State Park and Recreation Commission by naming, in accordance with the provisions of this article relating to classification."

In the planning of improvements to be undertaken within state recreation units, consideration shall be given to compatibility of design with the surrounding scenic and environmental characteristics.

State recreation units may be established in the terrestrial or underwater environments of the state including:

"4. State beaches, consisting of areas with frontage on the ocean, or bays designed to provide swimming, boating, fishing, and other beach-oriented recreational activities. Coastal areas containing ecological, geological, or scenic resources of significant value shall be preserved within state wildernesses, state reserves, state parks, or natural preserves.

Section 5019.5. Land carrying capacity survey of proposed park or recreational area. Before any park or recreational area developmental plan is made, the department shall cause to be made a land carrying capacity survey of the proposed park or recreational area, including in such survey such factors as soil, moisture, and natural cover.

Section 5001.96. Attendance limits. Attendance at state park system units shall be held within limits established by carrying capacity determined in accordance with Section 5019.5.

Excerpts from Fish and Game Code

(1) Section 10840. The California Sea Otter Game Refuge consists of and includes the following:

All that portion of Monterey and San Luis Obispo Counties between Carmel River on the north and Santa Rosa Creek on the south, lying west of the Monterey-Cambria Pines Highway, also known as California Highway No. 1. (Amended by Stats. 1959, Ch. 15.)

Section 10501.5. It is unlawful to fly any aircraft, including any airplane or helicopter, less than 3,000 feet above water or land over the Sespe Condor Sanctuary, and less than 1,000 feet above water or land over the Ano Nuevo State Reserve, the Farallon Islands Game Refuge, the Point Lobos State Reserve, the California Sea Otter Game Refuge, and Anacapa, San Miguel, Santa Barbara, and San Nicolas Islands, except for rescue operations, in case of any emergency, or for scientific purposes under a permit issued by the department.

Point Lobos Ecological Reserve has the following special regulations for use:

- (a) Fishing: The taking of fish for sport, commercial, or any other purpose is prohibited except by permit from the Fish and Game Commission.
- (b) Swimming and Boating: Swimming, boating and other aquatic sports are permitted except that such activity shall not involve the taking of marine plants, marine life, geological formations, or archeological artifacts. Boats may be launched and retrieved only in designated areas and may be anchored within the reserve only during daylight hours.

Carmel Bay Ecological Reserve has the following special regulations for use:

- (A) Sport fishing with hook and line, spear gun or hand-held implements shall be permitted from boats as well as from shore. No invertebrates may be taken, possessed or destroyed.
 - (B) Swimming, boating, surfing, skin and SCUBA diving are permitted.
- (C) Within Stillwater Cove kelp may be removed at any time to allow the passage and mooring of boats between Pescadero Rocks and Arrowhead Point.
- (D) If, at any time, the director of the department finds that the harvesting of kelp will tend to destroy or impair any kelp bed or beds, or parts thereof, or tend to impair or destroy the supply of any food for fish or wildlife, the director shall serve on every person licensed to harvest kelp a 48-hour advance, written notice that the kelp bed, or a part thereof, will be closed to the harvesting of kelp for a period not to exceed one year. After service of such a notice the person upon whom notice is served may appeal to the commission for a hearing to reopen the kelp bed or part thereof.
- (E) Not more than five percent (5%) of the total weight of kelp harvested in any one day shall consist of Nereocystis (bull kelp).
- (F) Any licensed person or company intending to harvest kelp within the ecological reserve shall give the department's regional manager of the Marine Resources Region, or his designee, at least 48-hours oral notice of the intention to harvest. At the option of the department, an observer selected by the department may accompany the harvester during such a harvesting.
- (G) Not more than 50 percent of the kelp within Bed 219 shall be harvested in any four-month period (see 630, Title 14, Public Administrative Code).

Excerpts from Administrative Code, Title 14

(1) Section 4664. Diving. As used herein, diving shall mean engaging in activities beneath the surface of the water. Diving shall include skin or free diving, and use of SCUBA (selfcontained underwater breathing apparatus).

No person shall:

- (a) Dive in any area closed under Section 4325.
- (b) Take or disturb any marine life, including plants and animals, or any geological feature in those areas designated as a State Reserve.
- (c) Enter an underwater park unit or state reserve for the purpose of diving, other than through an established Park entrance, nor while or after diving enter upon any property adjacent to said unit, or depart except through an established Park exit.

- (d) Take or disturb any marine plant or geological feature within the boundaries of an underwater park or state reserve.
- (2) Section 4665. Compliance with Other Park Rules Required. Nothing herein contained shall be construed to relieve persons engaged in skin diving from compliance with other rules of the State Park System.

Section 4325. Prohibited Area. To insure the safety and health of persons; to avoid interference in development, construction, and management; or to provide for the security, safeguarding and preservation of property in the State Park System and portions thereof, the District Superintendent may from time to time upon such finding by order declare a prohibited area, may specify the period therefor, and may from time to time revoke, suspend, repeal, or modify such order. A notice declaring a prohibited area shall be posted. The order may specify such reasonable classes of persons who may enter therein in the conduct of such proper activities or official duties as the District Superintendent may prescribe.

When by order a prohibited area has been so declared, no person so prohibited shall during the effective period thereof enter therein.

Section 4602. Point Lobos State Reserve. This section of this title, in addition to and as a supplement to other State Park System rules and regulations, shall apply to the Point Lobos State Reserve and not to other portions of the State Park System. It is hereby found and declared that the Point Lobos State Reserve contains many unique natural features worthy of special measures needed for its preservation. Therefore, no person shall:

- (a) Set or maintain a fire, including use of portable camp stoves.
- (b) Smoke on trails.
- (c) Picnic except in areas designated specifically for that purpose.
- (d) Walk in areas designated as closed.

Appendix E

Excerpt from California Park and Recreation Commission Meeting Minutes re Underwater Resources

At their February 11, 1971 meeting, the California State Park and Recreation Commission adopted the following resolution to establish a large underwater park area in Carmel Bay.

"WHEREAS, the Advisory Board on Underwater Parks and Reserves has recommended the establishment of a large marine reserve or park area in Carmel Bay; and

"WHEREAS, the staff of the Department of Parks and Recreation concur in this recommendation and have presented a report entitled 'Point Lobos State Reserve Underwater Resources Expansion Study', including proposed boundaries for said underwater park; and

"WHEREAS, the State Park and Recreation Commission concurs in said recommendation;

"NOW, THEREFORE, BE IT RESOLVED that the State Park and Recreation Commission does hereby endorse the concept of an underwater park in Carmel Bay and recommends to the Director of Parks and Recreation that boundaries be established from Cypress Point on the north to Yankee Point on the south (122 meridian) as indicated in Figure 2 of said report; and

"BE IT FURTHER RESOLVED that the State Park and Recreation Commission urges the Director of Parks and Recreation to negotiate with the State Lands Commission for the acquisition of said marine area and to commence ecological studies to determine the correct management policies for preservation of this unique natural resource in said area."

- (d) Take or disturb any marine plant or geological feature within the boundaries of an underwater park or state reserve.
- (2) Section 4665. Compliance with Other Park Rules Required. Nothing herein contained shall be construed to relieve persons engaged in skin diving from compliance with other rules of the State Park System.

Section 4325. Prohibited Area. To insure the safety and health of persons; to avoid interference in development, construction, and management; or to provide for the security, safeguarding and preservation of property in the State Park System and portions thereof, the District Superintendent may from time to time upon such finding by order declare a prohibited area, may specify the period therefor, and may from time to time revoke, suspend, repeal, or modify such order. A notice declaring a prohibited area shall be posted. The order may specify such reasonable classes of persons who may enter therein in the conduct of such proper activities or official duties as the District Superintendent may prescribe.

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- (b) Smoke on trails.
- (c) Picnic except in areas designated specifically for that purpose.
- (d) Walk in areas designated as closed.

Appendix F

Explanations of Determination of Erosion Hazard and Allowable Use Intensity Procedures

Determination of Erosion Hazard Rating

Two types of systems are used to rate erosion hazard. The equation method combines site characteristics with factors being varied to match conditions of the site, so that variation in any of the factors will affect the result to produce an estimate of expected soil losses. This method is somewhat complex and involves the application of a number of steps.

The second system is a factor weighting system which assigns values to specific ranges of conditions for each factor. These values are usually combined through a chart or table to get an overall value or rating for the site. The rating is usually an index number that gives comparative erosion hazards for different areas, but not an estimate of expected amounts of soil loss. This is the most widely used method in the field due to the ease of assigning values to the various factors. However, changes in one factor may, or may not, affect the overall rating. The factors considered in most systems include soil texture and depth, slope gradient and length, precipitation, vegetation type and percent cover, land use, and erosion control practices. The various systems differ considerably in the factors they include and the weightings given to them.

Three equation systems are in general use or under investigation in California. They are: (1) Wischmeier's Universal Soil Loss Equation, (2) Musgrave's equation, and (3) on-site Soil Erosion Equation recently developed by David Anderson of the U. S. Forest Service. Recent field studies by Dodge et al. (1976:87) and Dr. Gordon Huntington and William Alerdise, University of California, Davis (personal communication), show that the Universal Soil Loss Equation gave consistent agreement with measured rates of erosion but other systems tested did not. Separate systems need to be developed for mass movement. In this evaluation the Universal Soil Loss Equation is used to estimate map erosion severity.

Universal Soil Loss Equation

The Universal Soil Loss Equation was developed originally for use on croplands east of the Rocky Mountains, by the Agricultural Research Service. Recently the SCS has adapted it to soil, vegetation, and cropping conditions in California, but it has not been widely tested yet. Instructions and charts for using it have been recently published (U.S.D.A., 1975).

Wischmeier's equation is:

A = RKLSCP

where A is computed soil loss; R is the rainfall factor; K is soil erodibility; LS is slope length and steepness; C is the cropping management factor; and P is a factor for erosion control measures.

The quantity of soil loss computed by the Universal Soil Loss Equation depends chiefly upon two factors which are both directly controlled by man. These are the slope length-gradient factor (LS) and the cropping-management factor (C). Erodibility increases rapidly with an increase in gradient of slopes disturbed and the length which is disturbed.

Three problems were found in applying Wischmeier's equation. The cropping-management factor (C) is poorly defined for State Park System conditions and considerable management judgment is required in determining values. So much latitude is allowed that considerable error may result. The erosion control practice (P) is also poorly defined and needs clarification for easier application for State Park System conditions. The curves given for slope length and gradient (LS) only go to 60 percent slopes, requiring extrapolation and possible errors for steeper slopes.

The rainfall factor (R) was computed assuming a maximum two-year, six-hour rainfall maximum of 4.5 inches for Point Lobos. The storm distribution region is I and the soil moisture-soil temperature region is A-3. These combinations give an R factor equal to 455 (USDA-1975a:27-29).

The cropping-management factor (C) was calculated assuming areas disturbed for development will be mulched at two tons per acre of native grass straw. The C factor is 0.02 (USDA, 1975a:19).

The practice factor (P) is based on surface condition of construction sites. The condition assumed is "compact and smooth, scraped with buildozer or scraped up and down hill." Under these conditions, P = 1.3.

The above three factors are assumed constant for the Point Lobos area; thus RCP = 11.83. The slope length (L) was considered to be a maximum 100 feet. This may or may not be an average figure dependent on where and how roads and parking lots are constructed. However, it will give a constant figure that will allow comparison of soils in disturbed areas.

The slope factor was divided into three classes: 0 to 10, 10.1 to 20, and 20+. These classes were given an average percent slope in order to calculate (LS) from the slope effect chart (USDA, 1975a:35). The following are the constant (LS) factors for each slope class:

Slope	LS Factor		
5	0.54		
15	2,5		
60°	25.0		

The soil erodibility (K factor) was determined from the National Cooperative Soil Survey Soil Interpretation Records or, if not yet compiled for a soil series, from the soil erodibility nonograph (USDA, 1975a:30). Soil erodibility factors for each soil series in the study area are as follows:

Soil Series	(K)-A Horizon
Alviso	.40
Antioch	.43
Aquic Xerofluvents	54
Cieneba	.24
Coastal Beaches	.10
Dibble	.49
Dune Land	.15
Elder	.28
Elkhorn	.32
-Junipero	. 32
Lockwood	.49
Metz	.28
Narlon	.17
Pacheco	. 43
Pfeiffer	.17
Pico	. 20
Rocky outcrop	.10
Salinas	.43
San Andreas	.32
Santa Ynez	.49
Sheridan	.24
Xerorthents	.15

The computed soil loss per unit area (A) is recorded in tons per acre on the erosion hazard map (Map 6).

These figures represent estimated loss if soils are disturbed but mulched and reseeded before rainfall occurs.

Determination of Allowable Use Intensity

The ecological limitations on land use (EL) can be calculated as follows:

$$EL = f(S, G, E, C, H, P, Z, U, Cu)$$

Where S is slope; G is geomorphic stability and paleontologic potential; E is soil erodibility and compaction potential; C is climatic limitations; H is hydrologic limitations; P is phytocenosix parameters; Z is zoocenosic parameters; U is ecological uniqueness; Cu is cultural sensitivity, and f represents a function (Barry, 1976). This equation is expanded here to include esthetic values (Es) and visitor protection (Vp) and ecological limitations on land use as functions of allowable use intensity (AUI) as follows:

Individual parameters are rated according to significance, sensitivity, or hazard as

Very high	0		
High	0.1	_	3.0
Moderate	3.1	_	6 . D
Low	6.1	_	8.0
Very low	8.1	-	9.0

Map areas were given a 0-9 rating in order to code them into a computer. Computer processing can be used to generate a composite map of AUI.

On some maps each sensitivity class is subdivided, i.e., high may be any value from 0.1 to 3.0. Such subdivisions are useful to determine special cases such as the niches of very rare and endangered taxa, actual archeological or historical sites, or areas of extreme danger to unit visitors which would be given a 0 rating, which is a weighted overriding rating. If the 0 rating occurs on any resource evaluation map, those areas should generally not be used by the public; however, ranger-guided tours are appropriate in some such areas. In areas where a 0 rating does not occur, allowable use intensity is calculated by adding up the ratings occurring on individual maps and multiplying by the function for the series of resources evaluated here (11 parameters) which is 0.999. At least some of these values require judgments without sufficient data and the formula is somewhat subjective and will remain so until sufficient ecological monitoring and baselines are established.

Appendix G

Fire Ecology in Relation to the Ecosystems of Point Lobos State Reserve and Carmel River State Beach

Fire Ecology

Fires have burned through the vegetation of California for at least 100,000 years (Jepson, 1925). Features of the Mediterranean-like climate make the areas within the range very susceptible to fire occurrence and spread. Nearly rainless summers dry out the vegetation and soils. Daytime temperatures are high and humidity low during the summer, and high winds blow from the interior deserts and valleys to the Pacific Ocean during the dry months.

Early fires undoubtedly were caused mainly by lightning, which is still one of the primary causes of forest fires. Thus, fire has always been a natural feature of the environment. In climax chaparral, for example, frequent fires kept the plant cover at a young stage of development, and because of this periodic fuel consumption, fires did not burn with the intensity that is evident today. The frequency of lightning fires is indicated by the fact that in 1972 alone, 1,750 lightning fires occurred in national forests of California (Biswell, 1974).

Reynolds (1951) concluded that frequent, widespread, and knowledgeable burning was performed by the Indians and that this cultural practice probably extended the range of those plants on which the Indians' economy depended. The Indians set fires to enhance feeding grounds for wildlife and to make hunting easier; to facilitate collection of seeds, bulbs, berries, and fiber plants; and to increase the yield of useful plants such as manzanitas, the berries of which they used to make cider (Jepson, 1921; Sampson, 1944; Sauer, 1950; Reynolds, 1951; Stewart, 1956). The Indians also burned in forested areas to keep them open for easier travel and to reduce the danger of lightning fires in late summer (Gianella, 1972).

Probably, Indians burned the grass on deer winter ranges to keep ceanothus from being destroyed by intense summer fires, because they recognized that this chaparral shrub was a valuable winter browse. The fires could have been set in early summer when men would creep through and burn the dry grasses without killing any shrubs except small seedlings (Biswell, 1974).

That Indians frequently burned forested areas has been reported by various explorers and naturalists who observed this practice (Miller, 1887). For example, Galen Clark, for many years the guardian of Yosemite, and Dr. L. H. Bunnell, a member of the 1851 Yosemite discovery party, saw and described indian burning, and Joaquin Miller wrote in 1887, "In the spring...the old squaws began to look for the little dry spots of headland or sunny valley, and as fast as dry spots appeared, they would be burned. In this way the fire was always the servant, never the master... By this means, the Indians always kept their forests open, pure and fruitful, and conflagrations were unknown."

When Europeans arrived in California and took up mining, lumbering, and grazing, fires in forested areas became intense and damaging (Biswell, 1967). Miners used fire to remove slash after cutting timber for mining props and fuel, and to clear-cut the landscape to

facilitate mining activities. These slash fires must have been intense, but fortunately they did not kill all trees, many of which remained to reseed the landscape. Today, some of the best pine stands in California are found in areas where miners did heavy burning.

Early day lumbermen also used fire destructively. They had little or no concept of sustained-yield forestry; their idea was to cut and get out. Very often, therefore, they cut all the saleable trees in an area and then burned to get rid of the slash. This process resulted in high intensity fires that killed most of the trees that remained after logging. Many of the heavily cut and burned areas turned to chaparral (Show and Kotok, 1924).

Sheepmen were a third group that burned annually and killed many trees in their efforts to open up forest stands and to improve understory grasses and other conditions for grazing. Destructive fires of the early settlers caused much concern to thoughtful observers, and no doubt helped stimulate the conservation movement which followed around the beginning of the twentieth century. In 1872, legislation was passed to prevent setting of fires, but it was largely ineffective. In about 1905, the U.S. Forest Service adopted a firm policy of virtual fire exclusion on its land. A similar policy, finally adopted in 1924 by the California Division of Forestry, covered private lands (Clar, 1959). As a result of these policies, fuels have increased to a point at which any unwanted fire may become very intense and difficult to control. Costs of controlling wildfires have increased steadily over the years and are now extremely high, as are costs of repairing damage after such fires.

In 1945, the California legislature authorized the State Division of Forestry to issue control-burning permits for purposes of brush-range improvement. By 1971, ranchers and sportsmen had burned a net total of 775,402 hectares, of which 305,480 hectares have been reburned (California Division of Forestry, 1971). U.S. Forest Service and the Bureau of Land Management have also practiced prescribed burning on lands under their jurisdiction. More recently, the National Park Service initiated a program of burning in California to restore fire as a natural process and an important ecological factor in maintenance of natural landscapes (Kilgore, 1972; Kilgore and Briggs, 1972).

In selected places and under proper management and control, prescribed burning has been a useful tool in improving wildlife. There have also been associated benefits, such as more effective and less costly wildfire control, increased water yields, and improved access for hunting and recreation (Biswell and Schultz, 1958).

In prescribed burning, an important consideration is the fuel that carries the fire. In climax chaparral and scrub communities, the entire plant cover burns, although the fuels in some spots are more flammable than those in others and may burn under moister conditions. In woodland-prairie-chaparral mosaics, dry, herbaceous vegetation is the chief fuel that carries fire from one area of scrub or chaparral to another. In forest-chaparral or scrub mosaics, the fuel is varied. If the mixture is manzanita in Monterey pine, the pine needles serve as a fuel to carry the fire. Enough needles fall every year to carry a surface fire.

Fire in Chaparral and Scrub Ecosystems

Chaparral and scrub ecosystems are remarkably well adapted to recurring fires for several reasons: many of these shrubs stump sprout after fire, some reproduce further by layering or from underground stems, and seeds are produced at an early stage. These seeds may lie dormant in the duff and soil for extremely long periods of time, and they

have high resistance to fire. In addition to these adaptations, the brushlands have evolved toward characteristics that make them highly flammable and dependent on recurring fires for restoration and for optimum growth and health. This is a reciprocal relationship, because the frequent fires depend on the fuels that feed the flames (Biswell, 1974).

It has been suggested that plant communities subjected to frequent fires over thousands of years have developed, through the evolutionary process, features that make them highly flammable. Such fire-dependent plant communities burn more readily than those less dependent on recurring fires, because natural selection has favored development of characteristics that make them more flammable and at the same time more fire tolerant (Mutch, 1970). Herbaceous plants usually appear in some abundance in areas of climax chaparral following fires that consume the shrub cover. They reach their peak in one to five years, then decline and give way to the growth and reestablishment of shrubs. Finally, in the climax chaparral or scrub, herbaceous plants are sparse and include only those growing around rock outcrops or in other small openings where the chaparral fails to reach maximum density. Some of the species that occur on burned areas may not be found in nearby, unburned chaparral. They probably came from seeds lying dormant in the litter and soils since the last fire, which may have been some 40 or 50 years earlier. Plants that appear on burned areas but are rare elsewhere are called "burn species" and "fire followers." A fire in chaparral or scrub does four things favorable to the herbaceous species: (1) it consumes the shrub cover; (2) it destroys phytotoxic materials produced by the shrubs; (3) it prepares a good seedbed high in nutrients and moisture; and (4) it reduces for awhile the competition from shrubs. Some plants appear for only one year after a fire then disappear. Occasional fires are therefore essential for survival (Sweeney, 1956).

Fire in chaparral and scrub is both natural and inevitable. It has always occurred and probably always will because the vegetation becomes extremely dry near the end of the long hot dry summer. At that time also, humidity may be extremely low and winds high. These conditions make fire control extremely difficult (Biswell, 1974).

Climax chaparral and scrub are adapted to fire (Jepson, 1930), and periodic fires every 15 years or so appear necessary to maintain good healthy vegetation. Unfortunately, fire has generally been considered by most land management agencies to be a wholly destructive agent and not an integral part of chaparral and scrub ecosystems. Most of the effort in management has therefore been toward fire exclusion, i.e, doing battle with wildfires (often with bulldozers), building unsightly and largely ineffective fuelbreaks on ridgetops, and cutting access roads and trails; all of which favor increased runoff and erosion (Biswell, 1974).

Fire in Prairie Ecosystems

The importance of lightning-caused prairie fires has been largely ignored in the past (Komarek, 1968, 1971). Most lightning fires occur in prairie without leaving physical evidence of their causes and still are often erroneously recorded as having been started by other or unknown causes (Vogl, 1967, 1969). Areas burned by lightning fires have been reduced to insignificant amounts as widespread overgrazing, mowing, and plowing eliminate and interrupt fuels, while man-caused fires that accompanied the pioneer settlement of grasslands became abundant. Even when lightning was recognized as a source of prairie fires, the significance of these fires was generally ignored, or they were considered to be intrinsically detrimental (Weaver and Albertson, 1956).

Numerous studies have documented that lightning has been and still is a major cause of fires in most grasslands of the world (Batchelder and Hirt, 1966; Curtis, 1959; Ehrenfried, 1965; Granfelt, 1965; Hind, 1859; Komarek, 1971). These fires are infrequent in some areas, but regardless of their frequencies, lightning-caused fires are natural environmental factors that must be recognized to fully understand grassland ecology (Vogl, 1974). Recorded accounts of early explorers, travelers, settlers, scientists, and historians include descriptions of encounters with lightning ignition, man's use of fire, grassland fires, burned grasslands, and related phenomena (Batchelder and Hirt, 1966; Costello, 1969; Curtis, 1959; Daubenmire, 1968; Drummond, 1855; Ehrenfried, 1965; Gleason, 1913; Gregg, 1954; Harper, 1911; Hind, 1859; Humphrey, 1962; Jackson, 1965; Lehmann, 1965; Malin, 1967; Moore, 1972; Vogl, 1964; Weaver and Albertson, 1956; West, 1971). Most early witnesses to grassland fires or their effects appeared to accept them as rather commonplace, some even being aware of the ecological roles that these fires played (Vogl, 1974).

Grassland burning may reduce the number of woody species present, but this is usually offset by a corresponding increase in herbs. Repeated burning in native grassland communities generally does not decrease the species diversity and may even increase it by promoting growth of additional grasses, legumes, and other forbs, including annual plants. Although studies have not concentrated on vegetational changes in the same grassland with repeated burning; a quasi-equilibrium is probably reached after a certain number of fires, whereby the species composition remains fairly constant (McMurphy, 1963), with fire primarily affecting the number of individuals per species. The increase in the number of grass stems per plant and the number of grass plants per area with burning have been well documented for many species (Biswell and Lemon, 1943; Burton, 1944; Curtis and Partch, 1950; Czuhai and Cushwa, 1968; Dix and Butler, 1954; Kucera, 1970; Old, 1969; Ralston and Dix, 1966; Vogl, 1965). Increases in legume species and densities also often occur with burning (Clewell, 1966; Cushwa, et. al., 1966, 1968, 1970; Hilmon and Hughes, 1965; Hodgkins, 1958; Lemon, 1967, 1970; Martin and Cushwa, 1966). Some fires favor forbs over grasses and often promote the reverse, i.e., grasses over forbs (Daubenmire, 1968; Kucera and Koelling, 1964; Wright, 1969).

Prairie fires sometimes create disturbed sites or pioneer conditions that permit invasion by certain opportunistic species, such as annuals or short-lived perennials and "weedy" natives, or aggressive alien species. Because of disturbance by fire (Stewart, 1956) and other agents, grassland diversity is commonly assured by heterogenous mixtures of invaders, opportunistic pioneers, annuals (short-lived and long-lived), and stable perennials (Lemon, 1949; Quinnild and Kosby, 1958; Ramsay and Rose Innes, 1963). Conversely, prairies free from disturbance decline in species numbers. Native annuals are usually encouraged by burning, provided fires occur at appropriate times. Seed production, germination, and seedling establishment of annuals, as well as perennial species, are generally promoted by fire (Curtis and Partch, 1948; Cushwa, et. al., 1968; Ehrenreich and Aikman, 1957; Lloyd, 1972; Mark, 1965; Shaw, 1957; Van Rensburg, 1971). Heat treatment of seeds has been found to increase the germination rates of some species (Capon and Van Asdall, 1967; Martin and Cushwa, 1966; West, 1965). Included among the annuals are a number of "phoenix" plants, species that usually appear after a fire since germination and/or establishment is restricted to postburn sites. Most annual grasses and forbs are pioneers requiring open soils and full sunlight, conditions common on postburn sites.

If an area is burned after the annual plants have started growth, burning is detrimental and if repeated can eliminate the annuals. Some annuals like the California poppy can

withstand repeated top removal by fire or other agents up to the time of floral initiation, surviving for several years with vegetative regrowth until the plants can terminate with flower and seed production. But most annuals cannot survive fire once growth is initiated, particularly those whose germination is triggered by factors other than fire. Fire-stimulated annuals are seldom threatened by fires before setting seeds because of the reduced fuels (Vogl, 1974). Burning does not necessarily favor perennial over annual species, unless the fires occur after the annuals commence growth. Seeds of native annuals are probably seldom destroyed by the heat or flame of prairie fires; conditions for germination and seedling establishment are often created or enhanced by fire.

These generalizations were not presented to minimize the different results often obtained under a variety of grassland conditions. Real differences do exist in the reactions of various grasslands and grassland species to fire; for example, Palouse prairies react differently than short grass prairies (Daubenmire, 1968). Bunch grass reactions contrast with those of sod grass; upland rhizomatous sod-forming species have a different reaction from swamp species; and cool season grasses respond differently than warm season grasses. Time of burning and the frequency of fire can be so critical in some prairies that the results can be either beneficial or detrimental (Vogl, 1974).

Pioneer American ecologists focused their attention on prairie ecotones (Clements, 1916; Gleason, 1913, 1923; Vestal, 1914; Weaver, 1954; Weaver and Albertson, 1956; Weaver and Clements, 1938). These early studies coincided with the general cessation of natural and widespread prairie fires, as the sweeping prairies were interrupted by plowed fields, roads, fence lines, and settlements, or as prairie fuels were reduced by grazing and haying. The elimination of fires permitted dramatic and dynamic vegetational changes, as trees and shrubs previously held in check began to invade and grow along prairie-forest ecotones. Ecologists observed herbaceous vegetation being replaced by woody vegetation and prairies giving way to forests, occurrences that became so commonplace they seemed to relate to some universal property of the vegetation. These observations influence concepts of plant succession; that is, of one species replacing another in the unidirectional series until an endpoint is reached. Few of the originators of the concept apparently considered these vegetational changes as atypical or unnatural (Gleason, 1913, 1923; Harper, 1911, 1913; Voqi, 1967, 1970).

A more reasonable approach to the grassland succession is to abandon the traditional unidirectional approach and consider it as a cyclic or circular phenomenon (Vogl, 1970). Instead of progressing through a replacement series, occasionally checked and set back by catastrophes, prairies are maintained as vegetation cycles, the driving force of these cycles often being fires. Most prairie climates fluctuate from wet to dry and back again on a seasonal, yearly, cyclic or irregular basis, with the growth cycle or response superimposed on these fluctuations (Cowles, 1911, 1928; Jackson, 1965; Malin, 1967).

Prairie soil genesis is not only related to the post-fire productive growth of the vegetation, but also to the more rapid and efficient recycling of nutrients. In summary, succession can be better understood if the traditional concepts and terms are discarded and if prairie succession is considered as a cyclic or circular phenomenon in which fire, or its ecological equivalent, is essential (Vogl, 1974).

Perhaps of greater influence was the unconscious prejudice toward fire that usually starts in early childhood (Vogl, 1967a, b), and was, and sometimes still is, present among scientists. In either case, a lack of objectivity resulted which was responsible for the development of some of these contradictory research results. Conversely, some

investigations went to other extremes by overstating the case for fire and excluding all other factors or explanations (Vogl, 1974). A number of objective studies have positively demonstrated that fires produce damaging effects on prairie vegetation. If most grassland evolved with fire and then became adjusted to it through time, it is difficult to understand why these recent fires should produce adverse results, particularly since these same prairies have withstood countless trials by fire in the past. This, of course, does not deny that even fire adapted species have times and conditions when they are affected adversely by fire. Negative findings have been used to support hypotheses that fire had not previously been part of the prairie environment (Vogl, 1974).

Another factor that can produce extraordinary effects with burning is the abnormal accumulation of fuel that results from the exclusion of fire beyond natural frequencies. The effects of fire on bunchgrass, for example, are particularly variable between studies and from species to species. The nature of any bunchgrass or tussock-forming grasses is such that the aboveground growth dies back; it tends to become self-lodging. This results in plants impacted with litter, which causes decline in growth and ultimately leads to decadence. When fires finally occur, they are often detrimental, since lethal temperatures are attained or the weakened plants are slow to recover. Shoot meristems are particularly vulnerable to fire damage, and they become severely pediceled as the result of prolonged fire protection and/or erosion. High temperatures for long periods are also attained when experimental burns occur with little or no wind that would otherwise dissipate the heat and hasten the burning. Some bunchgrass species may have evolved under a regime of frequent fires normally spread by strong winds and, therefore, cannot respond favorably to conditions that deviate from these.

The results of studies conducted on remnant or relic prairies are atypical. In many regions, the remaining unplowed areas do not represent the original prairie, occupying sites with poor soils and exceptional topography, and supporting atypical assemblages of plants. Studies of the effects of fire on old fields (Curtis and Partch, 1948; Robocker and Miller, 1955; Swan, 1970; Zedler and Loucks, 1969), cemetery lots, railroad rights of way (Ralston and Dix, 1966), remnant prairies (Dix and Butler, 1954), and sand hills are necessary since they are often all that are left to study; but they should be used cautiously with their limitations in mind, when extrapolating or generalizing about the role of fire in an entire prairie.

Species of the edges of the range and on marginal sites also react differently because of peripheral selectivity and the presence of ecotypes (MacMillan, 1959). Such sites are often created by extreme environmental conditions and are delicately balanced, fragile systems that are readily upset by man's use and abuses. Adverse reactions to fire occur, not so much because the species present are not adapted to fires, but because the prairies are already precarious systems at the time of burning.

Many prairies have received protection from fires, particularly where fires have been considered with current land uses (Daubenmire, 1968). The elimination of fires that had been an intricate part of the environment has various effects, depending upon numerous factors including land use, prairie type and condition, and climate (Vogl, 1974). Light to moderate grazing to repeated mowing, for example, have replaced fire in some prairies since these uses tend to produce many of the same results (Daubenmire, 1968). These practices are not entirely equivalent, because of their incomplete recycling of nutrients and growth stimulation, but have helped to maintain prairies (Vogl, 1974). The open brush prairie savannahs of Manitoba, Minnesota, and Wisconsin quickly changed to closed forest with the advent of settlement and establishment of fire protection (Buell and

Buell, 1959; Ewing, 1924; Vogl, 1964b). These savannahs contained forest elements that were kept in reduced or suppressed forms by repeated fires, so that conversion to forest was very rapid once the woody species were released from their flaming bonds.

The bracken-prairies of the lake states are usually treeless and dominated by bracken fern (Pteridium aquilinum), along with grasses and other herbaceous plants (Curtis, 1959). Most bracken-prairies are considered to have originated after intense forest fires that resulted in increased surface water. The presence of this water led to the conversion of forests to sites suited for sedges, grasses, and bracken fern. Although additional fires are considered to have little effect on their vegetational composition, woody plants have begun to reinvade a number of these bracken-prairies since fire protection began (Vogl, 1964a).

Prairie also form various transitional types as they come in contact with scrub, chaparral, or coniferous forests. As in other prairie ecotones, the elimination of fires has generally resulted in expansion of the trees and shrubs at the expense of prairies (Blackburn and Tueller, 1970; Box, 1967; Box, et al., 1967; Brown, 1950; Dwyer and Pieper, 1967; Humphrey, 1962; Jameson, 1962; Leopold, 1924). Although fire exclusion has favored a general expansion of woody plants in these types, it has not necessarily benefited them (Christiansen and Hutchison, 1965; McIlvain and Armstrong, 1966). Many of these areas are now crowded with trees that are economically undesirable. In addition, excessive densities of woody plants has led to stand stagnation, weakened resistance, and establishment of species whose life cycles and life history requirements are out of adjustment with their environments (Vogl, 1974).

Most of the world's grasslands have been altered and weakened by overgrazing and other general abuses, including misuse of fire, and only faintly resemble the original native grasslands. As a result, many grasslands face the more imminent, basic problems: whether to burn or not to burn. There is little hope that future range management will often use fire unless grasslands are allowed to recover and long-range objectives and sound ecological management are considered to be more important than short-term economic gains (Vogl, 1974).

If the present trends prevail, the greatest potential use of fire will be in wildlife management, since many wildlife preserves, refuges, and hunting grounds still support native grasslands. Most of the National Parks of Africa, for example, contain various grasslands and/or savannahs and have management programs that include fire as an essential tool (Boughey, 1963; Brynard, 1964; Hill, 1971; Lemon, 1968; Van Rensburg, 1971).

The majority of grassland mammals and birds respond favorably to the changes created by the judicial use of controlled fire (Komarek, 1969), a response that extends to the nongain species (Beck and Vogl, 1972; Vogl, 1973). A number of grassland animals are currently mistaken for forest inhabitants, but in reality, were confined to forests more by necessity than by choice as adjacent grasslands and grassland borders were destroyed or invaded by forests. As the preferred grasslands and grassland edges were eliminated, some of the more versatile species continued to survive by retreating to the forest (Marshall, 1963). As a result, spectacular increases in wildlife production often occur as forest types are converted to grasslands and savannahs with burning. Although instances of animal mortality have been reported from prairie fires (Brynard, 1971; Moore, 1972; Vogl, 1967a), the general benefits derived from improved habitats, increased

productivity, growth stimulation, and other changes usually offset any direct mortality (Cancelado and Yonke, 1970; Hurst, 1970; Leopold, 1933; Riechert and Reeder, 1972; Vogl, 1967a).

Because of the rapid, widespread, and often thorough destruction of prairies in the United States and elsewhere, governments, universities, conservation groups, and other agencies have been attempting to preserve the last remnants or representative portions of these vanishing prairie communities. Attempts have also been made to restore or recreate prairies where they have been completely eliminated (Anderson, 1972; Cottam and Wilson, 1966; Greene and Curtis, 1953). As acquisition or restoration of prairies has become a reality, the question of management and maintenance has arisen, particularly in those grasslands where protectional loan has not guaranteed their continued, healthy existence. Bray (1957) and others were aware of the necessity of controlled disturbances in the preservation of natural area prairie and recommended burning over other forms of disturbances. Mowing, and mowing and raking have been the most common substitutes for burning, but these practices have some shortcomings compared to fire (Christiansen, 1972; Richards, 1972). The use of fire has been advocated in management of prairie preserves, particularly in tall grass prairies where woody plant invasion is a problem and heavy growth accumulations become self-defending (Anderson, 1972; Burt, 1971; Jenkins, 1971; Lindsey, et al., 1970; Thompson, 1972). Hanson (1938, 1939), Stone (1965), Boardman (1967), Voql (1967a), Butts (1968), Loucks (1968), and Odum (1969), have presented arguments for the use of fire in management of all fire-type communities, including prairies, that are part of national parks, refuges, and preserves. They reason that if fire was a natural part of such communities as prairies prior to man's interventions, the natural area management will be incomplete and prairie environments deficient until control burns or wildfires are allowed to again take their place in the natural order of things.

Fire in the Riparian Coast Redwood Forest Ecosystem

Although the coast redwood forests are always close to the ocean, they cannot tolerate the buffeting of ocean winds and the salt spray, and for this reason, prefer the more sheltered slopes in the valley floors or the screening of other trees such as Douglas-fir and Sitka spruce. The forests are coextensive with a heavy summer fog belt (Jepson, 1923; Roy, 1966).

Though the redwoods forest is normally very damp, there are periods of low humidity and high temperature when fires will burn readily. Fritz (1931) studied the fire history, revealed by over 100 fire-scarred stumps in Humboldt County in 1928. He found that during the past 1,100 years there were at least 45 severe fires on that particular area, or an average of at least four each century. These were fires mainly set by Indians, and there is a possiblity that some may have been started by lightning. Fritz felt that the redwood forest had persisted in spite of the fires. He particularly blamed past fires for the prevalence of heart-rot and butt logs among many of the large trees. Some later researchers have concluded that fire was a very important ecological factor in redwoods. Stone, et al. (1972), stated, "...the primeval redwood forest was a mosaic of ecosystems supporting redwood that existed prior to the arrival of white man. Fire was an integral part of the environment. This resulted in a forested mosaic of successional sub-climaxes, held or renewed in this mosaic by fire... Redwood is favored over other species in the presence of fire by its thick, essentially fire-resistant bark, by its capability to sprout along the stem and replace its branches when killed by fire, by its capacity to sprout from its root crown following the destruction of the rest of the tree..."

Stone, et al. (1972), concluded that aside from the white man's logging, "the major impact of his presence has been the vigorous suppression of fire over the last 50 years. This has not yet, however, resulted in any significant successional changes."

The primeval redwood forest maintained itself in an environment that included rain, wind storms, cooling summer fogs, and occasional fires. Redwood survives fire where other tree species are killed. It sprouts from dormant buds along the root crown if aerial portions are killed, or a new crown develops along the bowl of the tree, if only a portion of the crown is fire-killed. Redwood produces abundant quantities of seed regularly and seedlings become established readily on burned, as well as mineral soil. Maintenance of primeval stands in state and national parks should involve management practices that include fire and probably cutting and scarification (Weaver, 1974).

Fire Ecology in the Cypress Ecosystem

The occurrence of even-aged cypress stands that date back to known fires throughout California, indicates that these stands are produced after a fire. Fires were even more frequent before fire protection. The Monterey cypress may also burn less frequently. Growths occurring on rocky outcrops or thinly vegetated sites escape some fires because of discontinuous fuels (Vogl, Armstrong, White, and Coal, 1978). Burning has been shown to produce dense stands of Gowen cypress. Factors responsible for these extremely dense thickets include the production of a prolific number of seeds by parental trees, localization of seeds in erosion channels, clusters of seeds that adhere together, optimum germination and establishment conditions, and apparently high-seed viability. Dunning (1916) reported two groups of 50-year-old Gowen cypress mixed with 15-year-old reproduction. Similarly, other cypresses have shown stratification of different age groups.

Fire in the Monterey Pine Forest Ecosystem

Monterey pine cones remain attached to the trees for years, but they open and close several times during this period. Thus, a constant, though meager, seed rain results. Small numbers of pine seedlings were found in 34 of the 48 stands of White's study (as described in Vogl, et al., 1978). The seedlings were often only a few centimeters tall with thin stems and sparse needles, and probably were several years old, with growths suppressed because of the accumulated litter.

On the one small recent surface burn (White sample), there were some 490 seedlings per hectare in January after a previous spring burn, but they were 30 to 56 centimeters tall and had robust stems and profuse, dark green needle growth. Hence, even though the accumulating cones open without fire, and modest recruitment takes place, optimum conditions for reestablishment occur with fire, whereby maximum numbers of cones are opened and a receptive seed bed is prepared. Monterey pine is exceptional among the closed cone pines and cypresses in that fires that produce optimum reproduction are not as often the catastrophic types common to other species, but are more frequently surface fires in which parent trees survive (as indicated by basal wounds or fire scars on trees). The role of fire in Monterey pine, including possible distribution relationships, needs to be studied before sound management programs can be made. Fire frequencies and intensities may be particularly critical in the continuation of this conifer (Vogl, et al., 1978).

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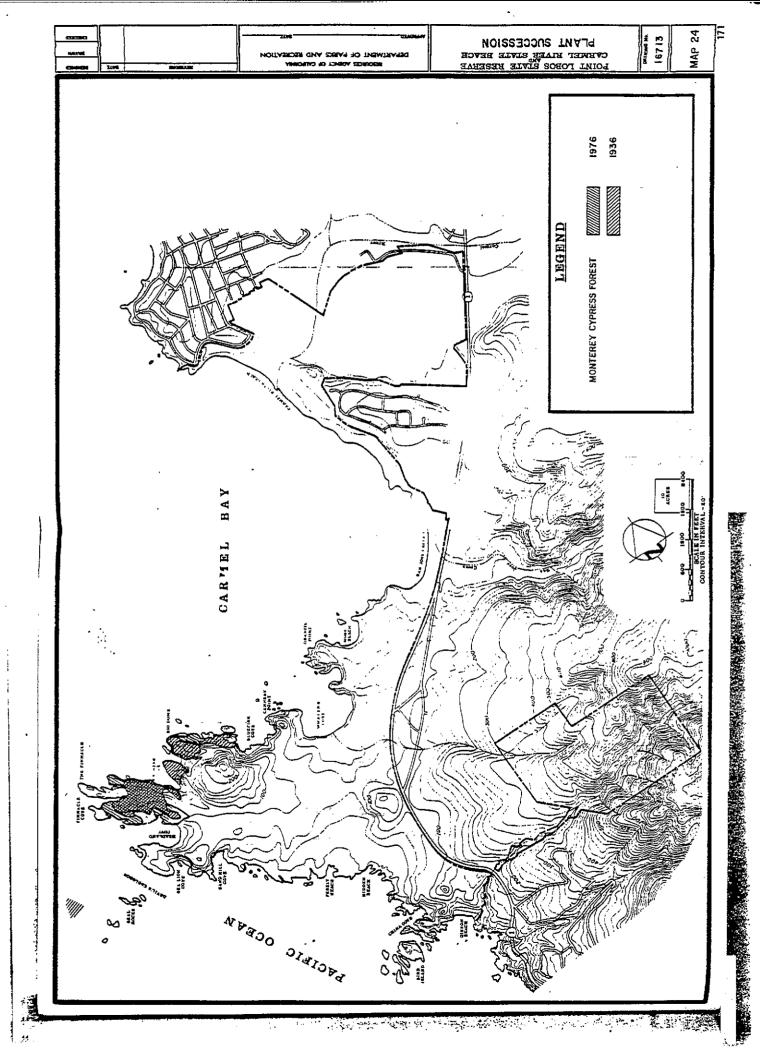
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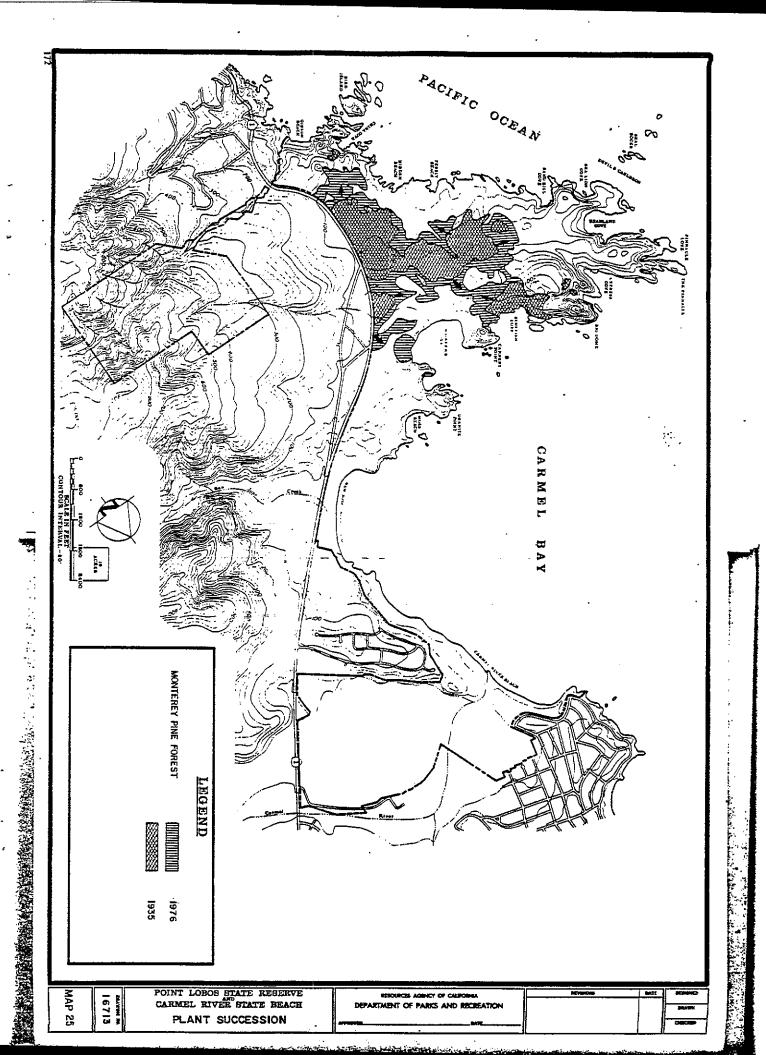
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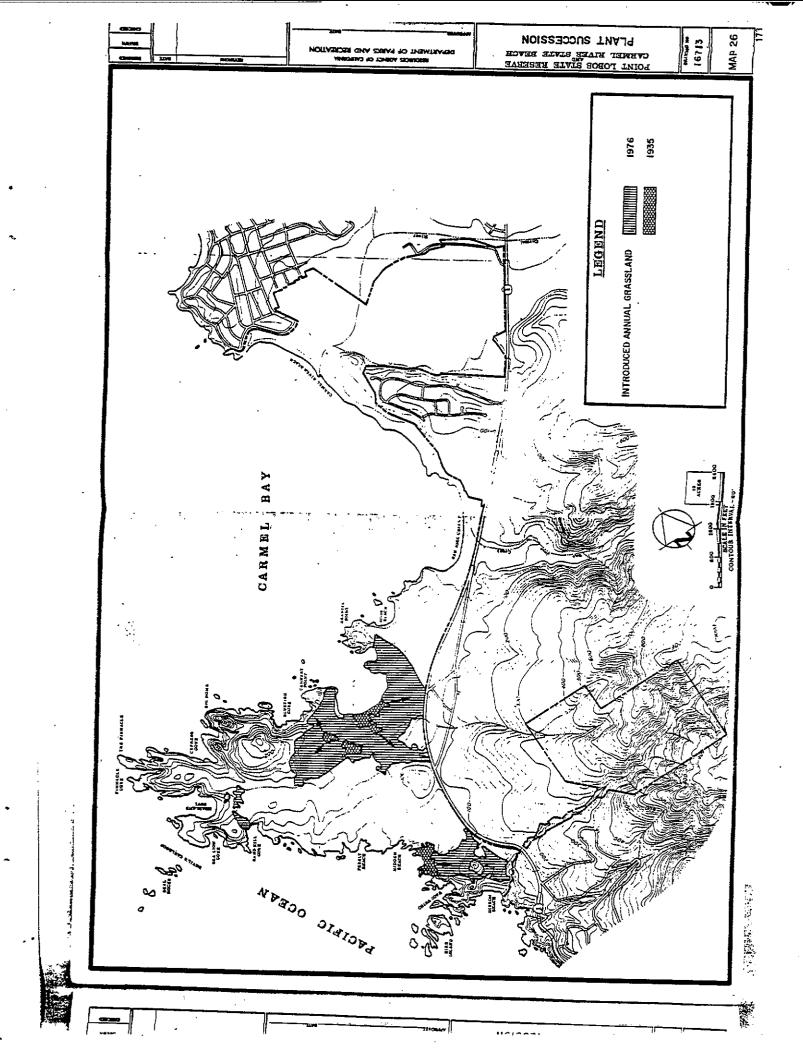
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Appendix H

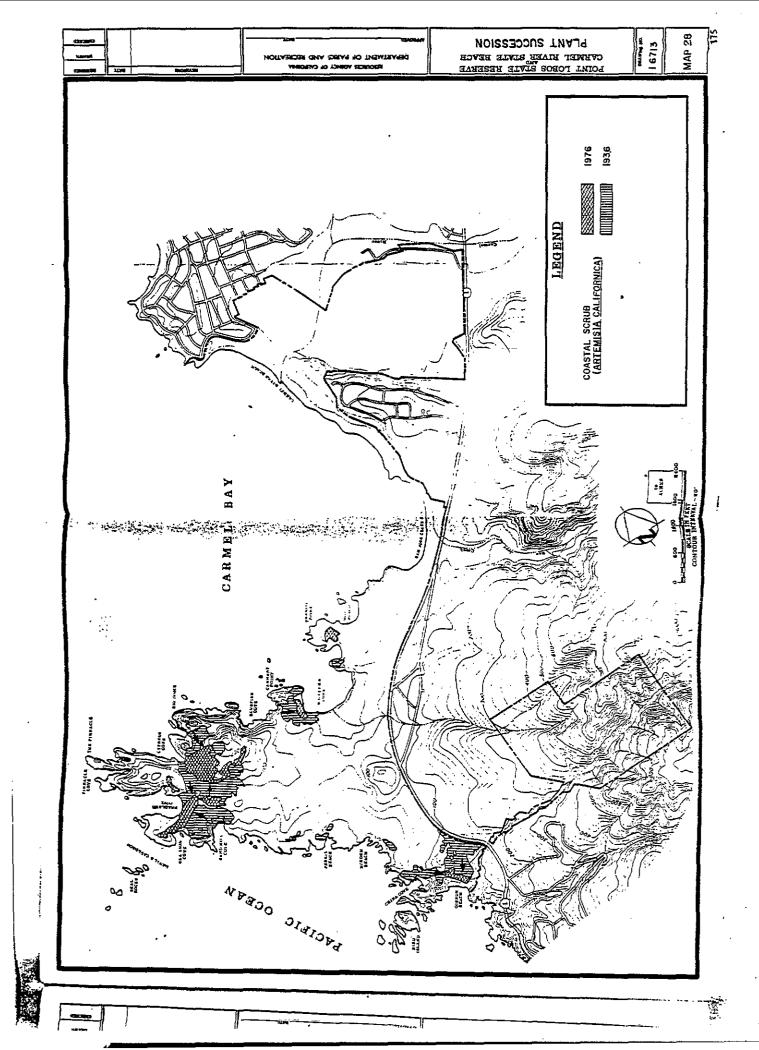
Plant Succession at Point Lobos-Maps







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Appendix I

COMMENTS FROM PUBLIC AGENCIES AND RESPONSES TO THESE COMMENTS

The preliminary Point Lobos State Reserve and Carmel River State Beach General Plan and Draft Environmental Impact Report was circulated to the State Clearinghouse (15 copies); the Association of Monterey Bay Area Governments; Monterey County Planning Department; the Carmel Sanitary District; the cities of Pacific Grove, Carmel, and Monterey; Mr. Earl Moser, Chairman, Point Lobos Advisory Committee; Mr. Bill Francis, President of the Audubon Society in Carmel; and Dr. Robert Mark of the Sierra Club State Park Task Force.

Newspaper ads were placed in the Monterey Peninsula Herald, the Salinas Californian, and the Carmel Pinecone. These ads explained where the document could be read. The document was placed in Harrison Memorial Library in Carmel, the Monterey County Library in Carmel Valley, and at the Department of Parks and Recreation District Headquarters and Area Headquarters. Comments requiring responses were received from the California Department of Fish and Game and the California Air Resources Board.

Part I: Comments from the California Department of Fish and Game and the California Air Resources Board

Memorandum

Te : 1. L. Frank Goodson
Projects Coordinator

Per February 28, 1979

2. State Department of Parks and Recreation 1416 Ninth Street, 14th Floor Sacramento, CA 95814

From : Department of Fish and Game

Subject: Draft EIR, Point Lobos State Reserve and Carmel River State Beach General Plan, Monterey County; SCH 79012922

The Department of Fish and Game has reviewed the subject general plan and draft EIR for the State Reserve and Beach complex in Monterey County and, with only two minor problems, concurs with the recommendations contained in the draft EIR.

First, we suggest that local public support for the recommendation to designate the wetland north of the Carmel River Lagoon as a "nature reserve" could be increased if access to this area is provided for more than just organized tours. The major intial impetus to protect this area originally came from local nature enthusiasts and "birders" who utilized and urged protection of the area as a bird refuge. If access other than structured guided tours is denied them, it will probably result in a good deal of local ill-feeling toward the Department of Parks and Recreation since the area is used constantly for birding recreation by individuals and small groups at all times of the week. We recommend development of a well-marked peripheral trail that would permit overview from all by the lagoon side of the wetland without permitting pedestrian entry into the marshland. This would go far to eliminating the need for the individual to join a scheduled tour, without intruding on the resource.

Secondly, local newspaper articles have alluded to the fact that there is local public confusion as to what constitutes this project. We would like you to clarify the fact that the Department of Fish and Game's Offshore Ecological Reserve is not part of this project and that there are no present plans for expansion.

We appreciate the opportunity to express our views on this project. If we can be of further assistance, please contact Eugene Toffoli, Regional Manager of Region 3 at P. O. Box 47, Yountville, CA 94559. The telephone number is (707) 944-2443.

Director

E (Fullerton

Memorandum

: 1) L. Frank Goodson To Projects Coordinator Resources Agency

> 2) Mr. James M. Doyle State Department of Parks and Recreation P.O. Box 2390

From : Air Resources Board

February 28, 1979 Date :

Subject: General Plan and Environmental Impact Report for Point Lobos, SCH No. 79012922

The Draft Environmental Impact Report (DEIR) shows sensitivity to environmental concerns by committing to all reasonable steps to mitigate adverse air quality effects. One example is the proposal to eliminate automobile travel and roadside parking within the park and offer shuttle service from parking areas outside the park.

We are pleased to note the plan presents a good effort to protect and preserve an extremely rare coastal environmental setting that includes six rare and endangered plant species. The Carmel Bay area contains the only known natural stands of Monterey Cypress forest and also one of only two known areas of Gowen Cypress. However, the Department efforts to limit activities within the park may have little effect in protecting the resources of the area if there will be extensive residential and recreational development immediately outside the park boundaries. A proposed 1700-acre resort development on Highway I across from the park is one example of the development that could potentially severely impact the park. Such development proposals illustrate the importance of establishing methods to protect public lands from impacts of adjacent development of tourist facilities. The resulting increase in human activity can only further the risk of significantly deteriorated air quality in parks and other protected lands near urbanized areas.

The Department of Parks and Recreation may want to determine whether a Class I designation under the Prevention of Significant Deterioration provision of the Clean Air Act would serve to provide the means for long term protection of the Point Lobos State Preserve and Carmel River State Beach. The Air Conservation Program staff of the Air Resources Board is currently developing recommendations for additional Class I areas in California and should be contacted regarding this issue.

Thank you for the opportunity to comment on the DEIR. If you have any questions, please contact Carolyn Stromberg (916) 322-2700 or Tim MacHold at (415) 561-1031 of my staff.

William C. Lockett, Chief

Planning Division

Part II: Response to Comments by the California Department of Fish and Game

The first comment expressed concern that the use of the Carmel River Lagoon area would be limited to guided tours after the lagoon has been classified as a Natural Preserve. The trail adjacent to the lagoon is presently open to the public along the beach and along the south side of the lagoon, as shown on Map 23 (page 93). We are in agreement with your statement that: "We recommend development of a well-marked peripheral trail that would permit overview from all by the lagoon side of the wetland without permitting pedestrain entry into the marshland." The guided tours that were talked about in the report would be in the more sensitive lagoon and marshland areas.

Pages 89 and 90 and the map on page 91 describe what is the Carmel Bay Ecological Reserve, which is within the jurisdiction of the Fish and Game Commission, and the Point Lobos Ecological Reserve, which is also the Point Lobos Underwater Reserve, a part of Point Lobos State Reserve. The larger underwater reserve that has been recommended by this report, as shown on page 91, is being proposed by our department. We believe that it is made clear that this has been recommended by our department and not Fish and Game.

Response to Comments by the Air Resources Board

We are interested in protecting the parklands from the deleterious effects on adjacent properties. We will be interested in pursuing the possibility of a Class 1 designation under the prevention of significant deterioration provision of the Clean Air Act, and we will be contacting your Board on this.

This report was prepared by:

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Special thanks to the Point Lobos Advisroy Committee and the Point Lobos Natural History Association-

And many thanks to those interested citizens who contributed greatly to these plans by attending the public meetings.